THE AUTOMOBILE

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Eagle Rock Hill-Climbing Contest.

MORE than a full minute was cut off the best previous record by William K. Vanderbilt, Jr., at the fourth annual hill-climbing contest on the Eagle Rock course at West Orange, N. J., on Thanksgiving Day. His time of 1:36 3-4 made in his 30-horsepower Mors in the class for vehicles costing more than $3,000, was the best performance of the occasion—and the occasion was the largest and most successful hill-climbing event ever held in the United States.

There were thirty-two entries for the contest and of these twenty-five were present and competed, watched by a crowd of 2,000 spectators. It was a perfect Thanksgiving Day—clear sky, sun shining cheerfully, air crisp enough for the boys to be skating, and only a moderate breeze. The course up to the crest of Eagle Rock was in better condition than ever before—hard, smooth, dry and gritty, with no loose dust or stones except at one point. Unfortunately that particular place was the first and worst sharp turn, and the combination caused the only accident of the day. F. A. La Roche, in his 40-horsepower Darracq racer, while making an attempt in the same class with Vanderbilt, after having made on accent in 1:46, took this sharp right-hand turn at full speed, going forty miles an hour. He was accompanied by A. J. Picard. The turn has practically no banking, and when the car struck it and the steering wheels were turned at an angle all four wheels began to slide, aided by the loose stones and their own rotary motion. La Roche and his companion leaned to the right to hold that side of the car down and

HARLAN W. WHIPPLE IN 20-HP. MERCEDES CAR AT EAGLE ROCK.—Time, 2:11.

La Roche kept on turning the steering wheel in the effort to bring the front of the car into the road. But it was to no purpose; thirty or forty feet above the turn the machine slid diagonally into a two-foot trench or ditch and brought up against

EAGLE ROCK HILL COURSE.
*Where La Roche Was Ditched.

the eight-foot bank of a cut made when the road was built. La Roche's companion was pitched out against the soft bank and was unhurt. The car kept on up the ditch for two or three yards and, striking a stone that brought it to a stop, threw Mr. La Roche out onto the road on the right side.

The small group of spectators gathered at the turn and others scattered among the trees along the course nearby, ran to the spot fearful of finding one or both of the riders injured, but the one had already picked himself up and La Roche, upon being assisted from an awkward position to his feet and "shaking himself together" nonchalantly called upon the crowd to give a hand in pulling the car out onto the road again. A few minutes sufficed for this and, after a hasty examination to see that the car was in safe condition, La Roche and his assistant started the engine, mounted and started on up the steepest part of the hill to the finish.

This incident created the only excitement of the day, though there was much enthusiasm and wonderment over the remarkable speed shown by some of the other contestants, and a great deal of shouting, with megaphones and without, to warn spectators and competitors to look out for the machines as they went up and came down the hill. The shouting was not unnecessary, for the risk of accident was very real at the starting point. In order to gain full headway for a flying start, the machines made a long run down a slight incline near the end of which they had to cross at an angle an electric car track that turns into the road there. Just beyond the track the road was very uneven and caused the machines to bound and sway violently, immediately after which they struck an easy turn on the level just before crossing the starting tape. The greatest crowd of spectators was congregated at this turn, on both sides of the road, and there were no guard ropes and only one or two policemen to keep the people from crossing the road. Mostly through good fortune and the good sense and wariness of the people, nobody was run down here. And the skill and coolness of the drivers held their cars to the course when going at from thirty to forty miles an hour. Another source of danger was the fact that horse traffic was not excluded from the course during the trials, which lasted from 10 a. m., to nearly 2 p. m., and a number of pleasure vehicles and some milk wagons drove up and down the hill while ascents were being made. The angles and curves of the course itself, as shown by the accompanying map, increased this danger, as in several places it was impossible to see more than a short distance ahead, owing to high banks and trees upon either side of the road. The distance from starting point to the finish was very nearly one mile; and the grade varied from virtually nothing at the start to 14 or 15 per cent. for very short stretches in the steepest part near the top. The average grade was 7 to 9 per cent.

It was a record-breaking day, no less than five competitors making the ascent in from 22 to 66 seconds less time than the best time made a year ago on the same course. The best previous time was 2:43, made by W. J. Stewart, in a Locomobile steam two-passenger vehicle, especially fitted with a large boiler and burner. The five who got inside of this record this year were all in gasoline cars. They were W. K. Vanderbilt, Jr., (Mors 30-hp.), 1:36 3-4; I. M. Uppercue (Stevens-Duryea 7-hp.), 1:37; F. A. La Roche (Darracq 40-hp.), 1:46; H. W. Whipple (Mercedes 20-hp.), 2:11, and L. J. Phelps (Phelps 15-hp.), 2:21 1-4. No less than ten cars, all gasoline, got within the record of 3:45, made by O. P. Nestman in the Stevens-Duryea last year.

The better times made this year were due in large measure to the favorable weather, as a drizzling rain a year ago left the course in the last contest half an inch deep in greasy mud that reduced the traction of the wheels and caused dangerous skidding. With the course in the condition it was this year, Eagle Rock Hill does not present any serious difficulties to the hill-climbing capabilities of any of the 1903 or 1904 models of the well-known machines. Even the least powerful of the machines, nor the big touring cars filled with their full complement of passengers as required by the rules of the contest, did not become stalled even on the stiffest part of the grade, while the stripped cars took the first two-thirds of the hill with a rush and only came down to the intermediate, if at all, at the 10 per cent. and steeper.

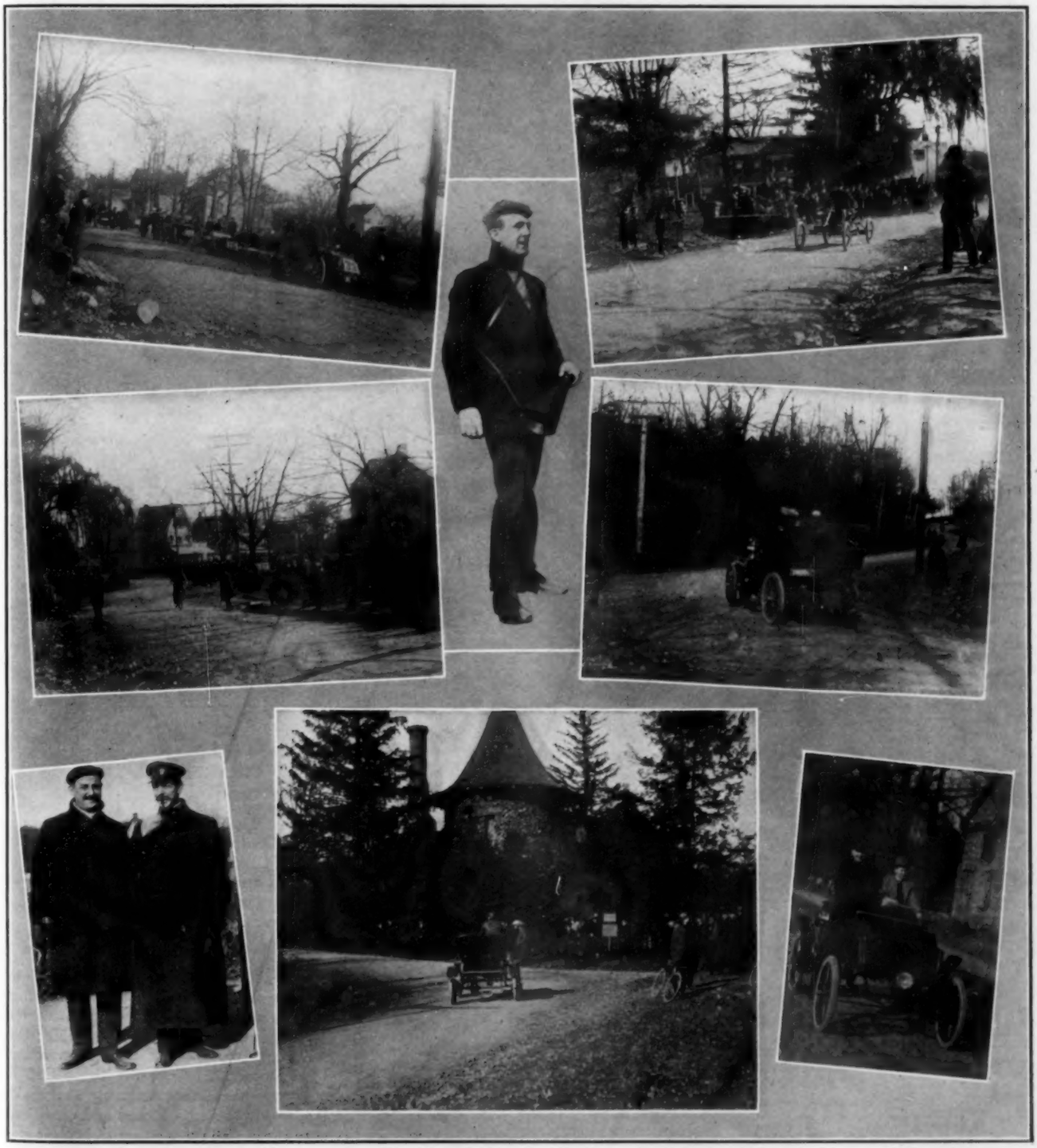
Until the arrival of Mr. Vanderbilt, interest centered largely in a specially

F. A. LA ROCHE'S DARRACQ CAR OFF THE ROAD.—NOBODY HURT.

fitted Stevens-Duryea chassis operated by I. M. Uppercue. This had a low, rakish appearance and was painted white. When not in use it was kept concealed from

class for cars listing at $1,000 to $1,800, it made an ascent in 1:38 1-2, and later in a special event for gasoline vehicles under 1,800 pounds, it reduced this time to 1:37,

L. J. Phelps, in his 15-horsepower Phelps, won a double victory, making the best time (2:21 1-4) in the event for cars listing at $1,800 to $3,000, and best time



Competing Cars Awaiting Their Turns.
P. W. Johnson Starting on "Indian" Motorcycle.
A. J. Picard and F. A. La Roche.

C. H. Gillette, Secretary A. A. A.
Clerk of Course.
Franklin Car at Last Turn.

Orient Buckboard Crossing Starting Line.
Columbia Touring Car at First Sharp Turn.
Thos. A. Edison and Grandson.

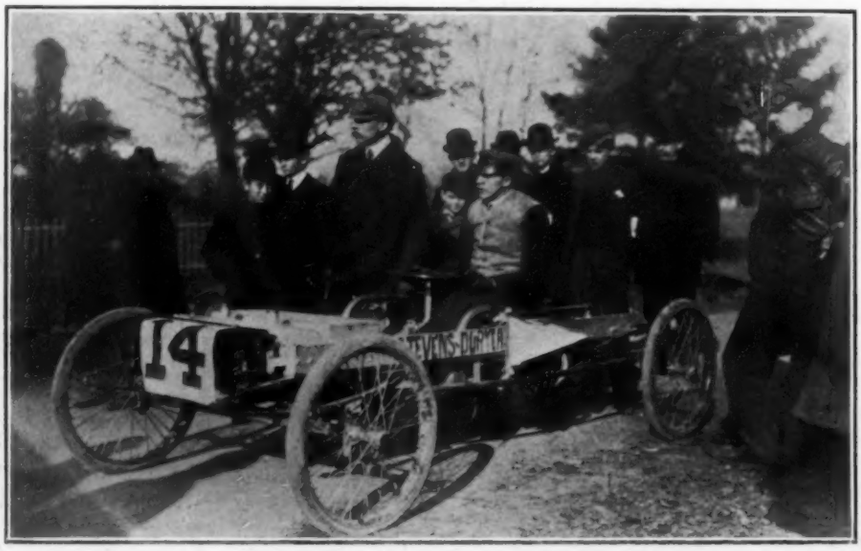
SNAPSHOTS AT EAGLE ROCK HILL-CLIMBING CONTEST, WEST ORANGE, N. J., THANKSGIVING DAY.

prying eyes by a white muslin cover. Though only rated at 7-horsepower, this machine developed surprising speed, and, being quiet in operation, produced a ghostly effect as it darted about. In the

flat—within one-quarter second of the time made by Vanderbilt, and Vanderbilt cut more than two minutes off of the best time made last year by a gasoline car—3:45 made by O. P. Nestman in a Stevens-Duryea.

in the free-for-all class under touring conditions (2:55 3-4).

Although the steam vehicles were represented by only one car—a Locomobile owned and operated by A. Phelps—



STEVENS-DURYEA CHASSIS WHOSE SPEED CREATED SENSATION.—Time 1:37.

Results of Eagle Rock Hill-Climbing Contest.

GASOLINE VEHICLES UNDER $1,000.

Order.	Entered By	Car.	Price.	Wt.	Hp.	Time.
1	Crescent Automobile Company	(Cadillac)	$750	1,375	6½	3:19
2	L. J. Wyckoff	(Orient Buckboard)	375	400	4	3:34
3	New York Cadillac Company	(Cadillac)	750	1,375	6½	3:42
4	G. Paddock	(Oldsmobile)	650	950	5	3:53½
5	H. J. Koehler	(Rambler)	750	1,200	6	4:06½
6	J. A. Plank	(Oldsmobile)	650	950	5	4:07½
7	Motor Car Company	(Cadillac)	750	1,375	6½	4:17
8	L. L. Chinn	(Cadillac)	750	1,375	6½	8:05

GASOLINE VEHICLES, FROM $1,000 TO $1,800.

1	Motor Car Company	(Stevens-Duryea)	$1,200	1,300	7	1:38½
2	American A. S. Company	(Franklin)	1,300	1,700	10	3:21½
3	W. T. Baird	(Stevens-Duryea)	1,200	1,300	7	4:13½
4	Dr. H. Power	(Duryea)	1,350	850	6	4:59½

STEAM VEHICLES, ALL PRICES. ONLY ONE STARTER.

1	A. Phelps	(Locomobile, steam)	$950	1,000	4	3:54

GASOLINE VEHICLES, FROM $1,800 TO $3,000.

1	L. J. Phelps	(Phelps)	$2,000	1,500	15	2:21½
2	R. T. Heitmeyer	(Darracq)	2,800	1,600	16	3:55
3	Motor Car Company	(Peerless)	2,800	2,000	16	4:09½
4	T. McCarty	(Winton)	2,500	2,250	20	6:25

GASOLINE VEHICLES, OVER $3,000.

1	W. K. Vanderbilt, Jr.,	(Mors)	$9,000	2,200	30	1:36½
2	F. A. La Roche	(Darracq)	10,000	1,750	40	1:46
3	H. W. Whipple	(Mercedes)	12,000	2,600	20	2:11
4	N. F. Brody	(Columbia)	5,000	2,600	24	3:20

ELECTRICAL VEHICLES, ALL PRICES.

1	New York Edison Company	(Columbia)	$2,000	2,000	8	6:38½
2	H. C. Whipple	(National)	1,000	1,400	5	7:39½
3	Studebaker Bros.	(Studebaker)	975	1,450	4	8:15½
4	G. F. Bailey	(Columbia)	1,000	1,800	6	N.T.

OPEN FOR GASOLINE VEHICLES, ALL PRICES; TOURING CONDITIONS.

1	L. J. Phelps	(Phelps)	$2,000	1,500	15	2:55½
2	A. Phelps	(Locomobile, steam)	950	1,000	4	3:37½
3	American A. S. Company	(Franklin)	1,300	1,700	10	3:56
4	J. A. Plank	(Oldsmobile)	650	950	5	3:58½
5	W. T. Baird	(Stevens-Duryea)	1,200	1,300	7	4:05
6	G. Paddock	(Oldsmobile)	650	950	5	4:20½
7	Pope Motor Car Company	(Pope-Toledo)	3,500	2,500	24	5:10½

SPECIAL EVENT FOR GASOLINE VEHICLES UNDER 1,800 POUNDS. ONLY ONE STARTED.

1	Motor Car Company	(Stevens-Duryea)	$1,200	1,300	7	1:37

there were four starters in the event for electrics, which was won by a Columbia, entered by the New York Edison Company, in 6:38 1-4.

The event for gasoline cars listing at less than $1,000 was won by the Crecsent Automobile Company's 6 1-2 horsepower Cadillac in 3:19.

Several motor bicyclists also essayed the climb, the best time being made by P. W. Johnson on a 1 3-4-horsepower Indian, who covered the course in 2:10 3-4.

The accompanying table gives a complete summary of the events of the day.

The contest was the regular annual hill-climbing event of the Auomobile Club of New Jersey.

The officials in charge were as follows: Timers, S. M. Butler, secretary of the Automobile Club of America; Dr. J. W. English, of the New Jersey Automobile and Motor Club; O. J. Woodward, of the Automobile Club of America; and C. H. Gillette, Automobile Club of New Jersey; Referee, S. A. Miles, Manager N. A. A. M.; Clerk of the Course at the Start, M. L. Downs; on the course, H. H. Everett, at the finish, C. H. Gillette.

During the day the entry of William K. Vanderbilt, Jr., was secured by W. J. Morgan for the two weeks of racing on the Ormond-Daytona Beach, Florida, beginning January 25, immediately following the Madison Square Garden automobile show. Mr. Vanderbilt thinks that he should be able, on the smooth, level Florida Beach, to not only break Henri Fournier's American straightaway mile record of 51 4-5 seconds, but also the record of 46 seconds made by Augieres in a Mors in Paris. The 30-horsepower Mors that Mr. Vanderbilt used on the Eagle Rock Hill was the one which, a year ago last August made the world's straightaway kilometer record of 29 2-5 seconds and the mile record of 48 2-5 seconds.

After the conclusion of the hill-climbing trials, Harlan W. Whipple, of the A. C. A. and A. C. of N. J., entertained the contest officials and several newspaper men at a luncheon at the Orange Club.

Would Make Stone Throwing a Felony.

"To make the punishment fit the crime" in the case of mischievous boys and ruffians who throw stones and other missiles at passing automobiles, it is proposed in Cleveland to circulate a petition among local motorists asking the State Legislature to amend a recent statute that makes it a felony to throw stones and other missiles at railroad cars, locomotives and street cars, so as to include automobiles. This law makes the punishment, upon conviction, imprisonment in the penitentiary for not exceeding three years or a fine of from $50 to $500, while under present conditions the person who throws objects at automobiles can be convicted only of a misdemeanor and fined a small amount.

Mr. Barnes, advertising manager for the

Peerless Motor Car Company, who proposes to circulate the petition, argues that the injuries liable to be inflicted are just as great in the case of a rapidly moving automobile as in the other modes of transportation, and thinks that some such rigorous measure is needed to put a stop to the practice. The glistening and rapidly moving automobile seems to offer just the kind of target that the mischievous youngsters and maliciously inclined persons of more mature age seem especially to delight in, and there have been many complaints of late of such occurrences. Only a week or so ago, while Mr. Barnes and W. H. Kirkpatrick were riding down East Prospect Street in Cleveland the front window of their car, which happened to be down, was shattered by a stone and it was only by good fortune that the men escaped being struck by the stone or cut by flying glass. It was a dark night and a search in the immediate neighborhood failed to reveal anyone.

Recently at Lima, Ohio, three toughs were convicted under the State statute mentioned and heavily fined for throwing stones at a train. An example of this kind, given due publicity, would unquestionably reduce the trouble of automobilists from this cause.

EFFECT OF ALDERMANIC AUTO KNOWLEDGE ON SPEED LEGISLATION.

LOUISVILLE, Ky., Nov. 30—The effect that a more intimate knowledge of automobiles than is usually possessed by members of city councils may have upon the matter of speed and licensing legislation, has been exemplified here this year. Last spring the council took up the subject of automobile speed regulation very seriously and for several weeks there were threats of passing an ordinance enforcing low speed limits and other restrictions. But the Louisville Automobile Club took up the matter with the mayor and drafted an ordinance that seemed reasonable and equitable from their point of view. At the same time individual members of the club who had friends and acquaintances in the council persuaded them to take rides in their cars and after giving them thorough practical illustrations of what limits of four to six miles an hour in an automobile mean, the subject of legislation was dropped and nothing more has been heard of the ordinance for six months.

At the recent election here Briscoe Hindman, vice-president of the automobile club, was elected Democratic park commissioner. Mr. Hindman was one of the first owners of a motor car in Louisville and has always been a rather fast driver, and, as two of the five park commissioners are now automobile owners, the indications are that the present park board eight-mile speed limit will be raised to fifteen or twenty miles before spring opens.

FIRST AGGRESSIVE STEP IN NEW A. A. A. CAMPAIGN.

New York State Association and American Automobile Association Form Alliance to Carry on Work.

PLANS OUTLINED FOR THE STATE CLUBS.

SYRACUSE, N. Y., Nov. 30.—The New York State Automobile Association was firmly established, details of organization perfected and officers elected at the first meeting of the Board of Directors held at the Yates' Hotel in this city Saturday afternoon and evening, November 28.

The board consists of a representative elected by each of the eight clubs now members of the Association, namely: Judge William H. Hotchkiss of the Buffalo Automobile Club; H. A. Baechle of the Automobile Club of Utica; Charles M. Page of the Albany Automobile Club; A. R. Pardington of the Long Island Automobile Club, Brooklyn; Emerson Brooks, of the Automobile Club of America, New York; Harry S. Woodworth of the Automobile Club of Rochester; Frederick H. Elliott of the Automobile Club of Syracuse and A. C. Tallman of the Auburn Automobile Club.

Messrs. Woodworth and Tallman were the only directors who were not present at the meeting, being unavoidably detained, and the Rochester and Auburn clubs were informally represented by temporary president Hurlburt W. Smith of Syracuse, who presided at the gathering.

Besides the above, C. H. Gillette of New York, secretary of the American Automobile Association, was present in the interests of that organization, of which the State Association becomes a distinct division. The A. A. A. will carry on all its aggressive work in New York State through the State Association.

The plan of union between the State Association and the A. A. A. is essentially as follows: The latter turns over to the treasurer of the State Association one-half of all dues and initiation fees received from clubs and individuals in New York State to be used in advancing the joint interests of the organizations. On the other hand, the State Association agrees to recognize no club or individual in its membership unless that club or member likewise becomes a member of the A. A. A.

Through the coalition of these organizations, the American Automobile Association gains more than 800 new members and five clubs, and becomes the most prominent of the national organizations acting in this State. The above numbers will be augmented largely in the near future, as automobile clubs in Binghamton, Cortland, Elmira, Ithaca, Troy, Oswego, Rome, Herkimer, Geneva and Oneida have indicated their desire to come into the State Association, which will eventually make the latter the strongest State body of allied automobilists in the United States. The election of officers resulted in the choice of Judge William H. Hotchkiss as president, Charles M. Page, vice-president, and Frederick H. Elliott, secretary-treasurer. The election in each case was unanimous.

Three committees were appointed to carry the ideas of the State Association to a successful issue in the State Legislature as nearly as possible, to make a stern and never-ceasing struggle for good roads and to increase the membership of the Association by the addition of members, clubs and individuals, in all parts of the State.

President Hotchkiss was made chairman of the Legislative Committee, with W. S.

F. A. LA ROCHE IN 40 HP. DARRACQ READY TO START.

Niles of the A. C. A., H. W. Smith, Syracuse, W. J. Youngs of the Long Island A. C., and another to be chosen later as his associates.

Emerson Brooks of the A. C. A. was chosen to lead in the crusade for good roads. Other members of his committee will be the respective chairmen of similar committees of the various clubs belonging to the State Association. It will therefore include such well-known and aggressive lovers of the sport as Albert R. Shattuck of New York, former president of the A. C. A., Frank G. Webb of the Long Island Club, Herbert Bissell of Buffalo and George S. Larrabee of Syracuse.

With A. J. Baechle as chairman, the membership committee will be made up of a representative of each club. It will be active not alone in soliciting individuals and clubs to join, but in assisting in the formation of automobile organizations wherever the opportunity offers throughout the State.

The constitution and by-laws, previously prepared by the Plan and Scope Committee and submitted to the eight clubs for discussion and amendment, were read and adopted. Incorporation papers were prepared and forwarded to Albany. It was also decided to open a State headquarters in Syracuse at once, for a period of one year.

As set forth in the opening paragraphs of the constitution, which will be made public soon, the objects of the State Association are to promote State organization in the use of motor vehicles for pleasure, to co-operate in securing rational legislation and the formation of the proper rules for and regulating the use of motor vehicles, to protect the interests and maintain the rights of the owners of these against unreasonable legislation and to carry on a vigorous campaign for good roads.

Judge Hotchkiss, the newly elected president, is also the chief executive officer of the Buffalo Automobile Club and is well and widely known in western New York. He was chairman of the Plan and Scope Committee which prepared the constitution and by-laws and also prepared the incorporation papers. Charles M. Page, vice president, is the secretary of the Albany Automobile Club.

Frederick H. Elliott, secretary-treasurer, has held a similar position with the Automobile Club of Syracuse since its formation. It was Mr. Elliott who first conceived the idea of the strength which would exist in a State association of allied automobile clubs, and about a year ago he commenced to correspond with various clubs relative to a meeting to talk matters over.

He urged the matter so strongly before the Syracuse Club that that body took up the project and appointed a committee to promote it, naming Hurlbut W. Smith as chairman and Mr. Elliott as a member of the committee. Mr. Smith went at the work with a will and shortly afterward had so interested the various clubs that those of Rochester, Buffalo, Auburn, Utica and Albany sent representatives here to a meeting at which temporary officers were elected, Mr. Smith being the president and Mr. Elliott the secretary. Mr. Smith appointed the Plan and Scope committee.

Last August Mr. Elliott went to New York and interested prominent members of the A. C. A. and L. I. A. C. in the State Association, and these finally voted to come in if the up-State clubs would join the A. A. A., which they agreed to do. Directors were at once elected and Saturday was the first of their gatherings.

The position to which Mr. Elliott was elected carries with it a salary to be fixed by the Directors at their next meeting.

NEARLY THE WHOLE INDUSTRY PLACED FOR NEW YORK SHOW.

By the final allotment of spaces in Madison Square Garden for the Fourth Annual Automobile Exhibition to be held from January 16 to 23, spaces to the number of 239 will be occupied by 152 exhibitors. Sixty-eight of the exhibitors are makers of complete vehicles, the others being manufacturers of or dealers in parts, fittings or supplies.

The capacity of the great Garden building has been exceeded in an unprecedented degree by the applications for space, and notwithstanding every available inch of space will be given over to the displays, more than half a hundred applicants are unable to secure display space. Never before in the history of Madison Square Garden has there been such a demand for space for an industrial exhibition, not even for the greatest bicycle show ever held in New York City—in 1896. For this reason it was found necessary to limit the number of spaces to any one exhibitor to four.

The allotments were made by a committee consisting of Frank W. Sanger, representing the Madison Square Garden Company; S. A. Miles, representing the National Association of Automobile Manufacturers, and Gen. George Moore Smith, representing the Automobile Club of America. Following is the complete list of exhibitors, together with their general location and the number of spaces each will occupy.

Platform and Main Floor.

Hartford Rubber Works Co., 2; Gleason-Peters Air Pump Co., 1; Fisk Rubber Co., 2; Automobile Supply Co., 1; Grout Bros. Automobile Co., 2; Hoffman Automobile Co., 4; Buckmobile Co., 1; Ford Motor Co., 2; Holley Motor Co., 1; Regas Automobile Co., 1; Desberon Motor Car Co., 2; Buffalo Electric Carriage Co., 2; U. S. Long Distance Automobile Co., 2; B. V. Covert & Co., 2; Firestone Tire and Rubber Co., 1; The Walter Car, 1; J. Stevens Arms and Tool Co., 3; H. H. Franklin Mfg. Co., 4; Waltham Mfg. Co., 3; Prescott Automobile Mfg. Co., 2; Automotor Co., 2; Crest Mfg. Co., 3; Chas. E. Miller, 1; Goodyear Tire and Rubber Co., 2; Columbia Lubricants Co., 1; Diamond Rubber Co., 2; Geo. N. Pierce Co., 2; Knox Automobile Co., 3; Autocar Co., 2; Peerless Motor Car Co., 3; Matheson Motor Car Co., 1; Kirk Mfg. Co., 1; Woods Motor Vehicle Co., 2; Thos. B. Jeffery & Co., 2; Olds Motor Works, 3; Upton Machine Co., 1; White Sewing Machine Co., 3; Electric Vehicle Co., 4; Apperson Bros. Co., 2; Haynes-Apperson Co., 2; Winton Motor Carriage Co., 3; Pope-Robinson Co., 1; Pope Motor Car Co., 4; Locomobile Co. of America, 3; Berg Automobile Co., 2; Vehicle Equipment Co., 4; Studebaker Bros. Mfg. Co., 2; Elmore Mfg. Co., 2; Baker Motor Vehicle Co., 3; Packard Motor Car Co., 3; National Motor Vehicle Co., 2; F. B. Stearns Co., 2; General Electric Co., 1; Cadillac Automobile Co., 1 1-2; E. R. Thomas Motor Co., 1 1-2; Gibbs Engineering and Mfg. Co., 1; Duryea Power Co., 1; Springer Motor Vehicle Co., 1.

Restaurant Exhibitors.

Moyea Automobile Co., 2; Standard Automobile Co., 1; Mercedes, 1; Smith & Mabley, 1; Georges-Richard-Brasier, 1; S. B. Bowman, 2; F. A. La Roche & Co., 1; Standard Automobile Co., 1; Panhard-Levassor, 2; Kenneth A. Skinner, 1; Central Automoible Co., 2.

Central and First Tier Boxes.

Hyatt Roller Bearing Co., 1; B. F. Goodrich Co., 1; Emil Grossman, 1; Continental Caoutchouc Co., 1; National Carbon Co., 1; Leon Rubay, 1; Manhattan Lamp Works, 1; Automotor Co., 2; Dayton Electrical Mfg. Co., 2; Whiting Mfg. Co., 2; Whitlock Coil Pipe Co., 2; Electric Contract Co., 1.

Balcony Exhibitors.

Cole & Woop, 2; Hendee Mfg. Co., 1; Champion Mfg. Co., 1; Dow Portable Electric Co., 1; G & J Tire Co., 1; Standard Welding Co., 1; American Ball Bearing Co., 1; R. E. Dietz Co., 1; Universal Jack and Power Co., 1; Federal Mfg., 4; Imperial Wheel Co., 1; Gray & Davis, 1; Youngs Automobile Co., 1; Briscoe Mfg. Co., 1; C. J. Iven Co., 2; Badger Brass Mfg. Co., 1; Post & Lester and Veeder Mfg. Co., 3; T. J. Wetzel, 2; Shelby Steel Tube Co., 1; B. F. Goodrich Co., 2; Midgley Mfg. Co., 1; Pope Mfg. Co., 1; 20th Century Mfg. Co., 1; Whalebone Rubber Co., 1; Stodder Tire Co., 1; Rose Mfg. Co., 1; Herz & Co., 1; C. F. Splitdorf, 1; A. H. Funke, 1; Atwater Mfg. Co., 1; Motor Cycle Mfg. Co., 1; Detroit Motor Works, 1; Scoville & Peck, 1.

Exhibition Hall or Basement.

Mack Bros. Co., 1; Rodgers & Co., 1; Brennan Mfg. Co., 1; Hollander & Tangeman, 1; Union Automobile Co., 1; Sandusky Automobile Co., 1; Springfield Automobile Co., 1; Elwin L. Smith, 1; Phelps Motor Vehicle Co., 1; J. H. Dawson Machinery Co., 1; Chelsea Mfg. Co., 1; Michigan Automobile Co., 1; Newbury & Dunham, 1; Howard Automobile Co., 1;

Rochester Steam Motor Works, 1; Fisher Motor Vehicle Co., 1; Graham-Fox Motor Co., 2; Northern Mfg. Co., 2; E. W. Bliss Co., 2; Electric Storage Battery Co., 1; Reid Mfg. Co., 1; Wheeler Mfg. Co., 1; Model Gas Engine Co., 1; Caldwell Lawn Mower Co., 1; O. K. Machine Co., 1; H. H. Buffum Co., 1; Société Franco-Américaine Automobile, 1; Richmond, Indiana, Mfg. Co., 1; C. A. Duerr & Co., 1; W. Irving Twombley, 1; Kensington Automobile Co., 1; Timken Roller Bearing Co., 1; Lackawanna Motor Co., 1.

EXTRA EXHIBITORS.

J. M. Quimby & Co., 1; E. J. Willis Co., 1; Morgan & Wright, 1.

F. O. Stanley in Heroic Light.

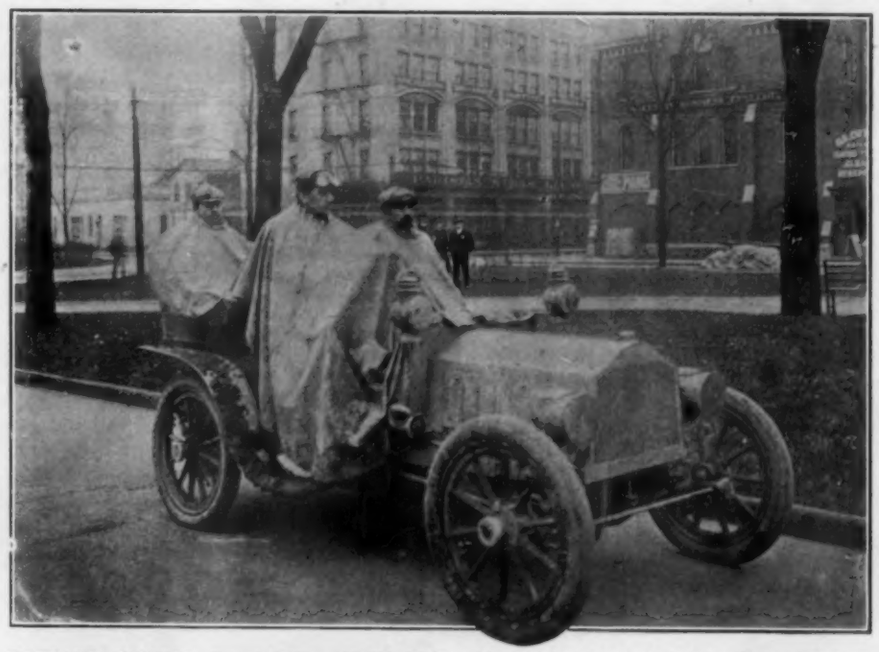
An interesting story comes from Denver regarding the stopping of a runaway horse, and the probable saving of one or more persons from serious injury if not from death, by F. O. Stanley of Newton, Mass. Mr. Stanley was out riding in a Stanley steamer, belonging to Dr. S. G. Bonney, on Fourteenth Street near Cleveland Place, when a terrified horse hitched to an express wagon dashed by. On the driver's seat sat a boy of ten who had dropped the reins and sat helpless, screaming in fear.

Mr. Stanley stopped his machine and called to a passer-by to get in, and was off like a shot, saying to the man beside him "Look out that we don't run into anybody and I'll catch that horse." They went in pursuit and gradually overhauled the runaway, which narrowly missed running down in succession an old man who slipped and fell on the icy pavement directly ahead, but scrambled out of the way in the nick of time; an old woman in a phæton, and an electric street car. The veteran motorist crowded the plunging animal slowly toward the curb, giving free way for other vehicles on the left side of the street, and as soon as he got abreast of it, began slapping the horse across the face with his cap. This confused the animal, which was already feeling the effects of the hard pace, and it slowed down to an easy lope, whereupon Mr. Stanley, of dry-plate fame, seized the bit and brought the runaway to a walk. The horse and wagon were then taken to the city hall, where the outfit and the boy were given in charge of the police.

Omaha has nearly a dozen expert women automobilists who operate their gasoline machines with all the confidence and skill shown by their husbands. Among these are Mrs. T. W. Bacon and her eight year old daughter who drove a machine alone in the Ak-Sar-Ben parade recently, Mrs. C. E. Willkins, Mrs. LeRoy Austin, Mrs. Dr. A. T. Hunt, Mrs. C. H. Gratton, Mrs. H. O. Jackson, Mrs. Frederickson, Mrs. C. T. Kountze and Miss Mary Joslyn.

Packard "Model L" Four-Cylinder Car.

Among the products of the Packard Motor Car Company's new factory at Detroit will be the new model L which has been developed and tested during the past summer. It is a vertical, four-cylinder motor vehicle of entirely new design. The pressed steel frame is wide at the middle, tapering to both ends. The various lever brackets are stamped from sheet steel and riveted to this frame. Long, semi-elliptic rear springs are hung to the frame by projecting pins and shackled at the rear. In front one transverse inverted semi-elliptic spring is secured at the middle by a strong clip to the frame, while the ends are shackle-bolted to the axle close to the steering knuckle, giving a three-point suspension for the frame and body and the desired flexibility for rough roads. Ball-socketed brace rods extend from the front axle ends to short steel fixtures on the frame reaches.



PACKARD "MODEL L" AFTER TEST TRIP TO CHICAGO AND RETURN—670 MILES.

The wheelbase of the car is ninety-two inches, and the tread is fifty-six inches.

The wheels are of wood, thirty-four inches in diameter, shod with four-inch double-tube tires and mounted on double ball-bearing axles. The hubs of the wheels are of cast steel, the rear hubs and brake drums being cast integral.

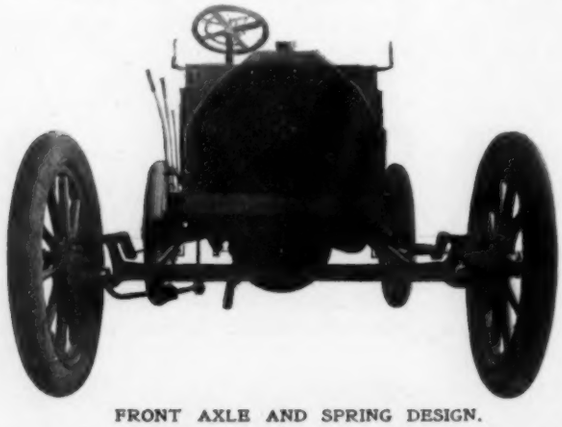
There are four brakes, all acting direct on the rear wheels. The foot pedal brakes are of expanding ring type, placed inside the same pair of brake drums on the outside of which the hand lever emergency brakes, which are of usual band type, operate. The pedal brake shoes are of cast iron, pivoted at the bottom to flanges brazed to the tubular rear axle, and expanded by a simple double cam device. The emergency brake bands are of thin spring steel lined with camels' hair belting, which has been found superior to leather or rawhide for this purpose.

THE FOUR-CYLINDER MOTOR.

The new Packard motor is of four cylinder vertical type, of twenty-five estimated horsepower, or perhaps more. The cylinders and combustion chambers are cast in pairs, the exhaust ports being cored in the combustion chamber castings. Inlet and exhaust valves are forged of nickel steel and finished to the same diameter and length. Screw caps, drilled and tapped for ignition plugs over the inlet valves and for kerosene injection cocks on the exhaust valves, are fitted to the combustion chambers. A horizontal branching tube of large diameter connects the motor with the throttle valve which is of rotating type, actuated by the motor governor in the usual way.

The illustration of the valve side of the motor shows the arrangement of the various parts clearly. The two tubes at the left and right of the vertical exhaust pipes are to relieve any slight compression in the crankcase caused by the receding pistons. The ends of these tubes are protected by gauze caps to prevent dust from finding its way into the crankcase. The forward exhaust pipe is partially surrounded by a flared hood or funnel, which is connected with the carbureter by a tube to lead warm air to the mixing chamber. The carbureter is of standard Packard type.

The cam shaft is operated by spiral gears. The contact breaker is of centrifugal type. The device comprises a weighted brush or contact member held by a light spring, and four contact points or terminals fixed equidistant within a light metal shell. The weighted brush is rotated by a vertical shaft driven from the cam shaft of the motor by small bevel gears, the centrifugal action throwing the brush outwardly, so that it contacts with the fixed terminals in passing and completes the circuit for each cylinder in turn. The device is perfectly self-adjusting and easy to manufacture. The containing shell is covered by a glass lid, so that the action of the apparatus can be seen readily. In future motors the contact breaker will be mounted on the dash in plain view of the driver, although in the present design it is forward of the dash and can be seen plainly in the illustration of the motor shown herewith.



FRONT AXLE AND SPRING DESIGN.

The electric equipment includes a duplicate set of storage cells and four coils. The coils are mounted on the dash where their interrupters are readily accessible. The accelerator and spark levers are conveniently located at the top of the steering pillar inside the web of the wheel. No foot pedal accelerator is used.

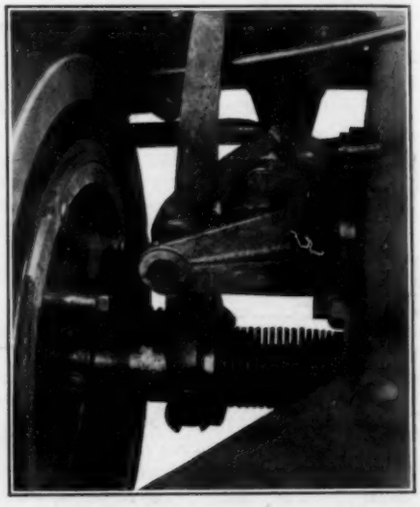
The Engagement Clutch.

The driving clutch is of expanding type. The driven member comprises an aluminum web, bolted to a steel hub, carrying a thin spring steel band, leather covered, which is expanded within the flywheel by means of a right and left hand screw of large diameter. The screw is rotated by the lateral movement of a collar carrying a rack which meshes with a pinion which is made of the same piece of steel as the right and left hand screw. The clutch is kept engaged by a spiral spring pressing against the clutch collar, and a forked lever is moved to draw the clutch in the usual manner. Although the end thrust is light in a clutch mechanism of this type, a double ball thrust bearing is fitted. This thrust bearing is mounted in an aluminum V bracket bolted to the frame of the car.

The Power Transmission.

The speed changing mechanism, bevel driving gears and differential form a complete transmission unit, the whole being supported by the rear axle and enclosed in two aluminum cases bolted together. An unusually long Cardan-jointed propeller shaft connects the clutch with the transmission.

The transmission is of sliding gear type designed for three speeds forward and reverse. Direct drive on the high speed is effected by sliding the intermediate speed pinion into the secondary shaft driving gear, which is both a spur and an internal gear, thus forming a positive clutch. The two gear shafts are mounted on double rows of ball bearings, the balls being one-half inch. All of the bearings are unusually large. The end thrust of the bevel driving pinion is taken by a ball end-thrust bearing of large size.

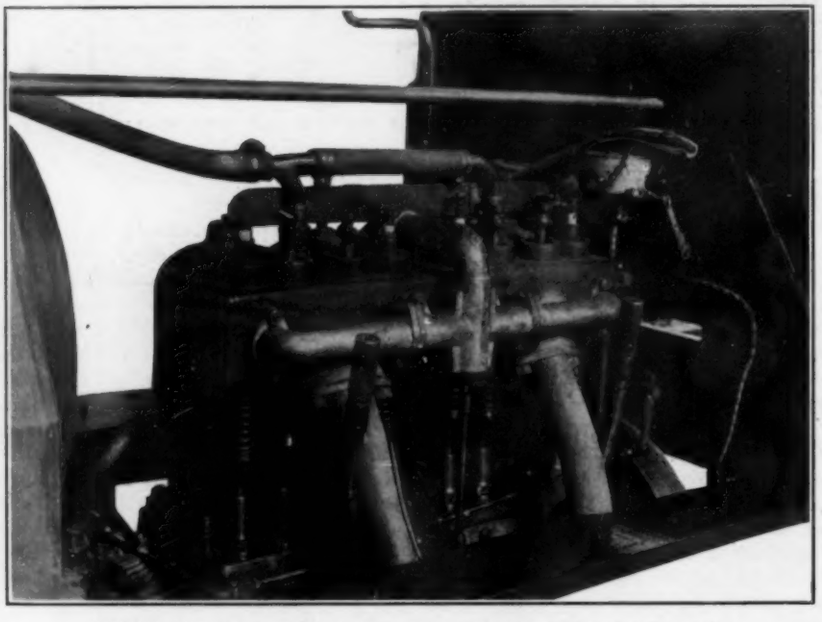


MECHANISM OF EXPANSION CLUTCH.

The reverse pinion is meshed across between the slow speed pinion and gear by means of a toggle-jointed device which is actuated by an independent hand reverse lever. When the reverse pinion is in mesh the toggle is straightened out and thus back pressure on the hand lever is relieved.

The construction of the entire transmission system is such that the complete mechanism may be drawn from its case by dropping the propeller shaft and removing the end lid of the aluminum case. The transmission case is filled with machinery oil, but as none of the shafts project through the sides, with the exception of the main driving shaft, leakage is minimized.

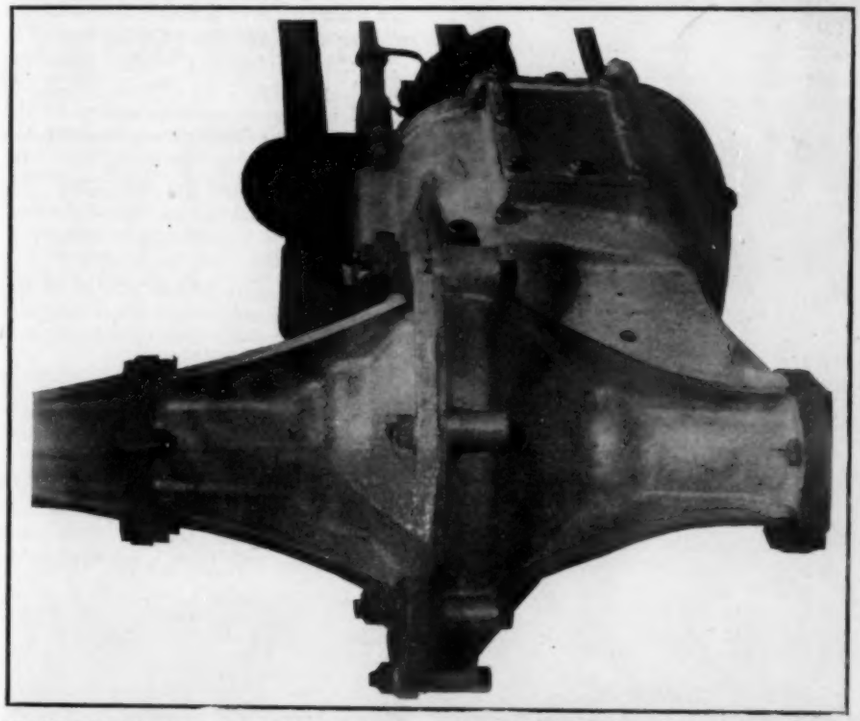
As the transmission is mounted on the axle instead of on the vehicle frame, it is essential that the device for locking the transmission gears shall be designed to prevent the movement of the body from disturbing the mesh of the gears. This is accomplished in a simple manner by turning properly spaced grooves in the gear shifting rod, which slides in the gear case in the usual manner. Steel balls, free to move vertically, are held in one or the other of these grooves by springs. To shift the gears, it is necessary to exert sufficient pressure on the hand lever to move the gear sliding rod, which will force the retaining balls out of the groove into which they are held by the springs. A further movement will present another groove and the retaining balls will snap into it, preventing the further movement of the rod unless actuated by the hand of the operator.



VALVE SIDE OF MOTOR—Commutator at Top of Vertical Shaft near Dash.

The rear axle of the car is tubular, and the split driving shaft is mounted on double ball bearings and carried within the axle in the usual manner. The differential is completely enclosed within a steel globe-shaped case. Between the two halves of this case the flange of the main driving bevel gear is fitted, the whole being held together by one set of bolts. A second outside case of aluminum encloses the completed mechanism, so that the exterior appearance is as shown in one of the illustrations herewith.

The differential case is packed with Albany grease and the outside aluminum case, in which the main driving pinion and gear operate, is packed with a mixture of Albany grease and oil. All the bearings and shafts are either packed with grease or run in oil. There is one lubricator on the car only and that feeds the motor cylinders.



TRANSMISSION GEAR AND DIFFERENTIAL, FORMING A UNIT—IN ALUMINUM CASING.

OTHER FEATURES.

The new Packard radiator is of cellular type, air circulation being aided by a suction fan which is belt driven at a speed of 1,500 revolutions. This fan is made up of sheet aluminum riveted together and mounted on ball bearings. Four gallons of water are carried in the cooler and motor cylinders. The circulating pump is of gear type, driven by spiral gears from the motor shaft at a speed of 700 revolutions.

Throughout the new Packard car ball bearings of unusually liberal dimensions are used wherever it is possible to gain efficiency by this means.

Interesting Trip to Nova Scotia.

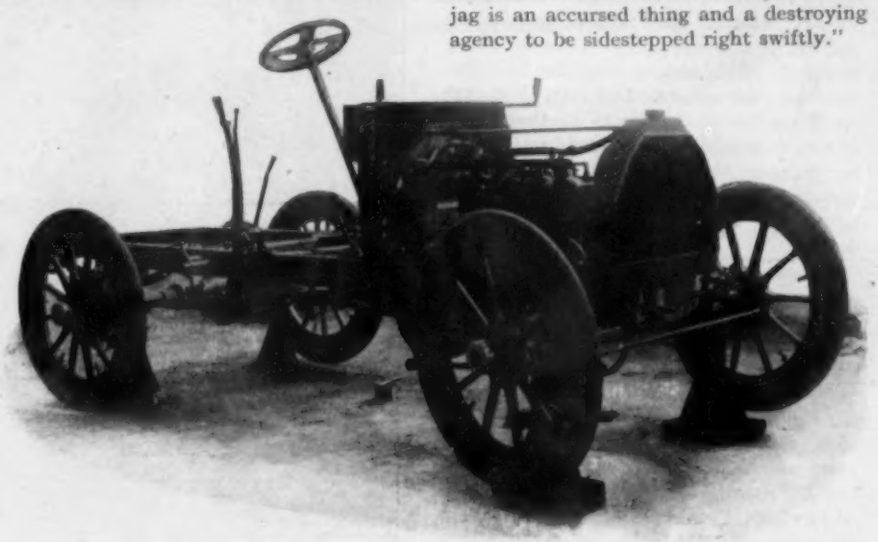
BOSTON, Nov. 23.—Samuel Slater, who started out in the early part of September to make a trip "down East," has just returned to Boston. During his excursion he met with many interesting experiences and visited places where an automobile had never been seen before. He is of the opinion that it is unnecessary for an automobilist to go across the water for varied and exciting touring. Mr. Slater was accompanied by J. A. Ferus, a chauffeur, and travelled through New Hampshire, Maine, New Brunswick and Nova Scotia.

In the provinces Mr. Slater ran upon many natives who had never seen an automobile. They were exceedingly curious, and although some were frightened, most of them were anxious to see "the thing" go. On one road into which the automobile was steered some natives said that it was the first pleasure vehicle that had been seen in the neighborhood in years. Some trouble was experienced with horses, most of the country beasts of burden being fully as frightened of the puffing touring car as were the drivers. At one place the car encountered a cart loaded with butter and eggs and driven by an old man who was apparently headed for market. The horse became frightened and in jumping about upset the cart. The driver was thrown to the ground and a basket of eggs landed upside down on his head. The effect, very disastrous to the eggs and the owner's temper, was nevertheless quite picturesque and Mr. Slater regretted that the egg-man found it incompatible with his dignity to pose for a picture. Very little trouble with the car resulted from the hard roads, but the tires had to be replaced.

International Alcohol Congress in Rome.

The "Circolo Enofilo Italiano," a society of wine growers and distillers at Rome, Italy, announces for the occasion of their yearly wine fair an international competition of apparatus utilizing denaturated spirit, such as motors, automobiles, motorcycles, alcohol lamps, heating apparatus, etc., to take place in Rome from February 6 to 16, 1904. Intending exhibitors will be charged an admission fee of 30 frs. ($6) and 10 frs. ($2) for each square metre of space occupied. The apparatus will be admitted to the competition in temporary exemption of customs duties, and any expense connected with their trial will be defrayed by the Circolo Enofilo Italiano, which may be reached through G. Rossati, 35 Broadway, New York. The congress will be held under the auspices of the Italian Minister of Agriculture and Commerce.

"Germany produced last year 93,000,000 gallons of potato alcohol, largely for automobile use," says an exchange. At last we have discovered the cause of the innate viciousness of the motor. Truly, an auto jag is an accursed thing and a destroying agency to be sidestepped right swiftly."



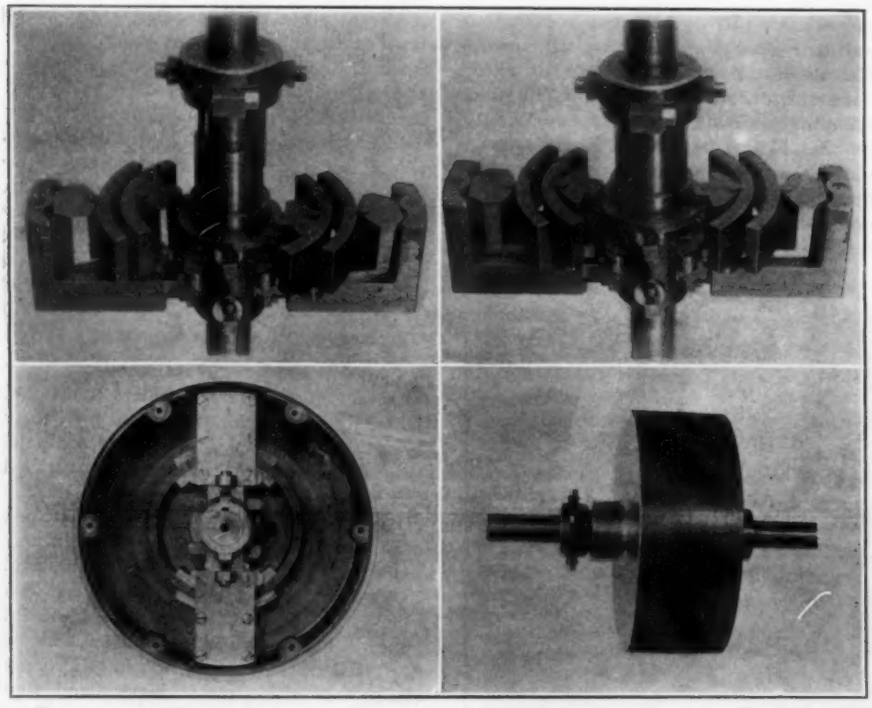
CHASSIS OF "MODEL L" PACKARD CAR.

Proposed New System in Coupling Clutches.

To produce a clutch free from all uncertainty as to its gripping power and from need of adjustment has been the main object kept in view by the Universal Clutch Company of Philadelphia, who are introducing the Varney clutch to the attention of automobile builders. On the other hand this clutch has the peculiarity that it operates in this respect like a roller clutch, only in one direction, automatically disconnecting the car from the driving power when the latter would otherwise act as a brake. In other words, with the Varney clutch the motor cannot be utilized as a brake to retard the car going downhill. The makers consider this feature an advantage, however, but are ready to yield the point to those who think differently, by providing means for turning the operating sleeve of the clutch half around and thereby making it act in the opposite direction when desired.

Adapted to a machine with a vertical or horizontal engine in front the Varney clutch would be of the flywheel type and the casing shown in the accompanying illustrations would be part of the flywheel hub—the whole clutch mechanism being of considerably smaller diameter than clutches of other kinds must be. With a planetary system of power transmission, the Varney device would take the place of the high speed clutch, but the makers of it promise to bring out also a new transmission mechanism which is especially adapted for use with their clutch and different from either clash or planetary gears.

The following description of the clutch gives an idea of the innovation proposed.



Clutch Locked. Assembled. Clutch Free. In Its Casing.

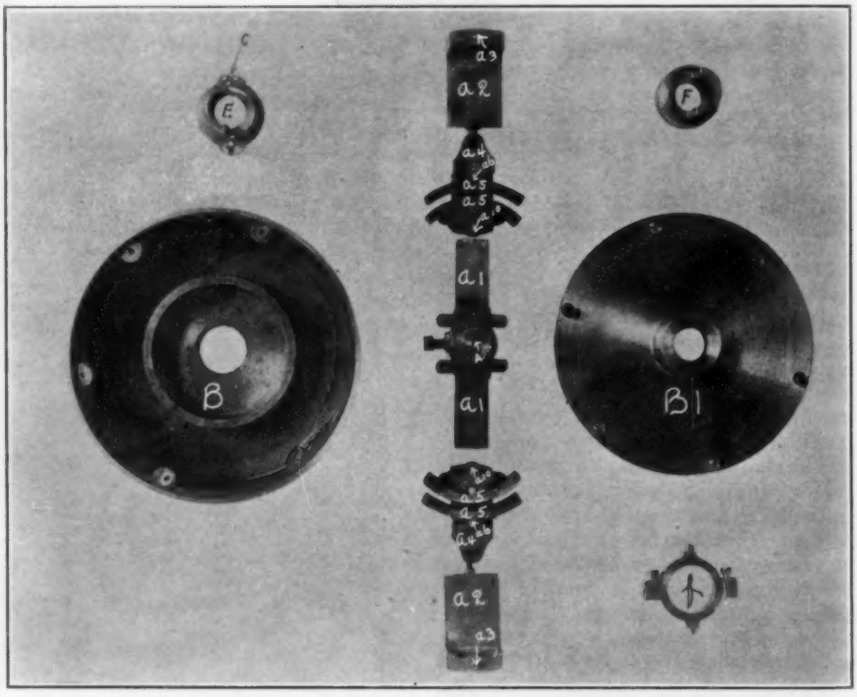
THE VARNEY CLUTCH.

B is the box in which the mechanism is enclosed. In this box there is an extended rim, upon the surface of which the friction shoes *a*-5 engage.

A-1 is the driving or driven shaft; mounted thereon is a member with lugs *a*-1. On each end of this member *a*-2 is placed, which, being hollow, allows a sliding movement. On this is supported a U-shaped piece *a*-4, which carries the gripping shoes. This is fastened to *a*-2 by pin *a*-3, and allows the member, *a*-4, to swing with a rocking motion. As this member swings, the gripping shoes retain the circle through their ability to turn on pivot *a*-6. As *a*-4 swings from this central or parallel position, the distance from *a*-3 to the center line of the shaft changes and to allow for this, *a*-2 moves towards the center on carrying arms, *a*-1. This allows for even pressure between both gripping shoes and the gripping rim of *B*.

As the member *a*-4 swings from the central position, the shoes, *a*-5, are carried in the same circular arc to the shaft *a*-1. The further *a*-4 swings, the tighter the shoes *a*-5 grip the rim. By observation, it may be seen that this action is on the plan of a "parallel rule," and as soon as the shoes are brought in contact with the rim, the tendency is to swing arm *a*-4, and the further it is swung, the tighter the gripping, until eventually it is locked; and the more power applied, the tighter the grip.

To allow for the operation and control of the friction members of the device, casting *E* which goes on shaft *a*-1 has lugs which engage with *a*-4 through the pin *a*-10. This piece, *E*, is also a bearing for case *B*. To have control over the rotary motion, the member *E* connects collar *F*, which has a spiral keyway cut in it, with both mem-



ALL THE PARTS OF THE VARNEY CLUTCH MECHANISM.

bers *a*-4, which are slipped over the shaft and telescope with *E*. By sliding *F* horizontally on the shaft, which has a key in it, a rotary motion is imparted to *E*. It is impossible for any part of the operating mechanism to change its position, unless the collar *F* is moved by the operator.

A consideration of the merits claimed for this clutch involves, by comparison with the clutches commonly in use, an interesting scrutiny of this important portion of the motor vehicle mechanism, and these special claims are, therefore, given in the following:

First. The motion is prompt and positive in either clutching or releasing, insuring quickness and reliability of action under all conditions of service.

Second. The control of the clutch is such that it enables the operator without undue effort or any injury to the device to gradually apply the necessary friction to bring the driven member to full speed, and it is impossible for the clutch to grip the rim tighter than the operator desires. It may be suggested that as soon as the shoes are brought into contact with the rim the tendency will be to engage or grip with a shock beyond the control of the operator. The principle on which this device is built demands the directly opposite result, and that this is obtained is borne out by test and demonstration of the complete device. In fact, a marked feature is the absolute control of the operator to operate the device either slipping as a friction device, or locked as a solid coupling, permitting at the same time a quick and easy release. When throttling the engine, the only power required to release the clutch is that sufficient to move the operating lever; or when the load is cut off for any reason, the clutch will automatically release itself; or if the speed of a driven member increases beyond that of the driving member, the clutch will automatically release and slip until the speeds of the two members have again become equal, when the clutch will once more take hold and carry the full load without any movement of the lever on the part of the operator.

Third. The clutch is constructed so that it compensates for wear, thereby obviating all adjustment of the moving and gripping parts; and, furthermore, is so made as to equalize and obtain a perfect distribution of the strain on all the friction shoes

Fourth. The entire mechanism is enclosed within a dustproof case, which is filled with oil to insure perfect lubrication of all the working parts, and avoiding excessive heating or cutting of friction surfaces.

Fifth. The power transmitted when locked does not depend on area of friction surfaces, but is governed by the limiting strength of the metal used in the clutch. The parts being contained in a small circle and constructed for an equal distribution of the strain obtains the best results and the greatest strength for a given weight of metal. The small relative diameter of the clutch and the proper distribution of the weight of the moving parts is such that the centrifugal effect of the clutch is reduced to a minimum.

MOTOR LIFE STIRRING IN THE IRON CITY.

Mischievous Boy Sent to Prison—Women Want Own Motor School—Club Lectures.

TRIAL SERVICE OF MOTOR EXPRESS WAGONS.

PITTSBURG, Dec. 1.—The Automobile Club of Pittsburg is one of the city's most important organizations. The stand the members are taking in matters that affect the city's good is of significance. In the case of the shooting in the club run from Pittsburg to Butler, when George Hoffman fired and injured Wm. A. Graff, the club offered $100 reward and brought the wrong-doer at once to justice. In the trial the boy of thirteen was convicted and sent to the House of Correction for three years. There was a pathetic scene in the court room, parents and friends of the lad protesting that he had never done a wrong thing before; the Automobile Club was appealed to to speak in the boy's favor, but they refused to make a plea on either side, They simply stated the facts of the case and left the decision entirely with the judge. They would not have been dissatisfied had the boy been set at liberty, but, on the other hand, the offense was a grave one. Notwithstanding all tears and appeals, the judge gave the verdict guilty and the penalty three years' imprisonment.

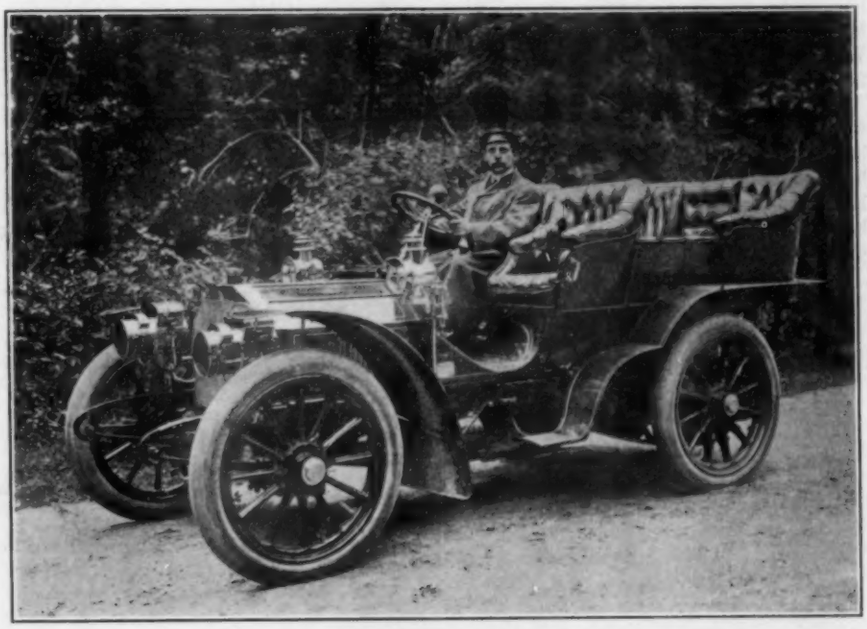
Considerable trouble has come from time to time as boys along the boulevards have annoyed motorists by throwing stones and jumping in front of speeding cars. The present boy's trial and penalty have acted wholesomely on the other youngsters, and this prompt measure is doing away with trouble from stone throwing at motorists and horse-drawn vehicles as well.

The growth of the Automobile Club has been rapidly progressive. Less than a year ago a few motor owners gathered together at the Dorset Hotel and talked over the need of an organization to get more fair road laws and pave the way for the interests which tend to promote motor sport. The men who spoke in favor of such an association were George Flinn, W. C. Temple, H. D. Hostetter, Reuben Miller, Jr., F. T. F. Lovejoy, Reade W. Bailey, H. P. Maxim, Thomas R. Hartley, and James F. Burke. A second meeting was called in May and the club was organized which, now, has over 200 members.

At a recent meeting the club voted to have a course of lectures this winter, having automobile experts come from New York and other centers. Negotiations are well under way for a new clubhouse site, but until headquarters are established the lectures will be given at the Hotel Schenley.

About seventy licenses to act as operators have been taken out by women in the Iron City, and there is a desire on the part of many to have an instructor and, in fact, a motor school of their own. The social feature, too, would be a pleasant one, for the young feminine motorists belonging to the fashionable set. The part that motoring plays in the social life of Pittsburg speaks for itself. Of the 540 automobiles in the city 56 per cent. are vehicles solely for pleasure; 40 per cent. are used for business and recreation, leaving only 4 per cent. which are used solely for traffic.

H. C. Frick has ordered a new Mercedes car of sixty-five horsepower, which will be shipped to America in April. This automobile has been specially designed for the owner and is being built for American roads. The car is a new model, fifteen feet long, with a very large body, which will seat seven people. Mrs. Frick is an expert motorist, and it is probable that she



H. C. FRICK'S 32-HP. MERCEDES.

will also drive this new car. Their son, Charles Frick, who is in Princeton, has had his Clément automobile sent to him there.

Several young college men of Pittsburg own motor cars, but most of the machines are kept in the East. In local circles the event of the week was the organization of the Pittsburg Board of Consuls of the American Motor League. This movement is considered in harmony with the ideas of the Pittsburg Automobile Club, and many motorists are members of both societies. The object of the club in the Iron City is to get better road facilities, better legislation, and the abolition of the toll-gates along the Butler plank road.

The first League meeting was held at the residence of Dr. J. A. Hawkins and the following officers were elected: President, or chief consul, E. E. Keller of the Westinghouse Company; vice-consul, G. Horton Singer, who has just returned from Europe; secretary and treasurer, Dr. J. A. Hawkins; board of governors, C. B. Mathewson, Thomas Reed Hartley, Dr. W. C. Clark, and M. F. Leslie. The yearly fees are $6.

Even at the first meeting arrangements were made to remove the annoyance of broken bottles on Pittsburg streets. The habit of throwing bottles into the street has been a constant vexation to motorists, and hereafter offenders will be notified and prosecuted.

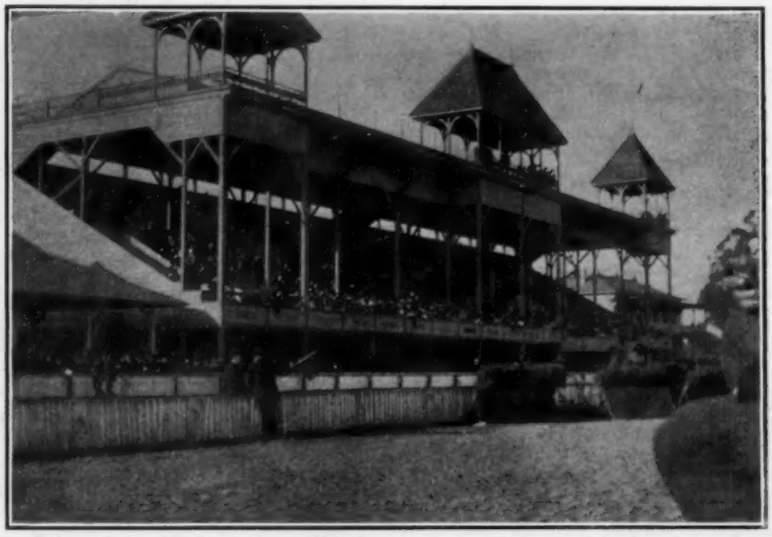
The new automobile express service which was opened this week between Pittsburg and suburban towns has been a fair success if one may judge from the first few days. A twenty horsepower steam truck with a carrying capacity of eight tons of freight has made six trips a day between Pittsburg and Homestead every day this week. The machine carries three or four times as much as any team of two horses can pull, takes the 16 per cent. grades and then makes 65 per cent. quicker time than the horse-drawn carts.

The automobile express has light wagons to do the collecting, while the express trucks are making fast trips between main stations. By this arrangement a parcel may be delivered within two hours after its purchase in any suburb within a radius of five miles. This is better time than the express companies now make even by availing themselves of the trains. Heretofore country carriers have gone from store to store throughout the city, gathering parcels until too late for delivery until the next morning, when they returned to the suburban stores. The wagons were left standing over night and the goods delivered the next forenoon. The steam trucks may so cheapen delivery in Pittsburg that the express companies may find it to their advantage to adopt a similar manner of transit instead of using the railroads. The experiment is being watched with keen interest, for if the venture is successful lines will be opened up to Sewickley, East Pittsburg and Coraopolis.

Southern California's Big Race Meet.

Los Angeles, Nov. 21.—The two days' race meet at Agricultural Park, given Friday and Saturday by the Automobile Club of Southern California for the benefit of "good roads," was certainly a success from a financial standpoint, even if the finishes were a bit straggling and uninteresting. Although Oldfield, as might be expected, was the particular star of the occasion, the other races were run in good time for their classes, one world's record being broken in the ten-mile race to-day by H. D. Ryus, who drove C. A. Hawkins' White car one mile in 1:06 and the ten miles in 11:20.

In the stand on the opening day sat a crowd that occupied every available seat and many of the aisles. Yesterday's crowd was even greater, stretching out down the track to the turns both ways.



THE GRAND STAND AT LOS ANGELES TRACK.

The "good-roads movement" should be a great gainer, if original plans are carried out. So successful was the meet in the matter of attendance on both days, that James W. Brooks, the California horse-race promoter, engaged Barney Oldfield to go against all his records from one to fifteen miles on Sunday and advertised the affair, drawing a larger crowd than on either Friday or Saturday, and estimated at upward of 10,000. It was not, however, patronized by the automobilists.

During the three-days' racing Oldfield lowered his own mile record three times, and created new figures for two miles and five miles. On the first day, in a trial against time, in Bullet No. 2, he cut his Empire City track figures of :55 4-5 to :55 1-5 in the first circuit, and, keeping on for a second round, cut this time again to 55 seconds flat. Taking the first turn at full speed, Oldfield slightly overestimated his distance and had to make a quick twist to miss the outer fence, going too close to it for comfort, but he gained time on the turn and every suceeding time he struck it he saved more, and when he flashed past the stand at the end of his second mile and :55 flat was hung up, the crowd could no longer contain itself, and a blare of automobile horns blended with the shouts of excited men and the shrill applause of women as the big machine and its pilot swung back into the stretch under its momentum. Oldfield was hoisted out of his car onto the shoulders of his admirers and paraded across the track much against his will. He was pleased with his work, and smiled and praised the track, saying it was the finest he ever drove a machine over.

Friday's races were good throughout, but owing to the unequal matching of the cars, they partook more of the nature of speed exhibitions than of competition. Oldfield had the rest beaten so far that many spectators lost interest after seeing him, and a succession of mishaps made long, tedious delays a feature of the succeeding events, and the program had to be switched around as it was impossible to run the events in their scheduled order.

The best race of the day and the only one embracing the elements of real competition was the special contest for the Huntington Cup, run last, but it was not an amateur affair, as had been expected. Frank Garbutt, in his White steamer, appeared against the Tincher, Franklin, Toledo and White Ghost, and beat all else but the Ghost, which proved a little too strong in endurance, its bigger boiler maintaining a surprising output of steam. The start was good, but at the turn into the stretch the Toledo cut across Garbutt's "bows" too close and made him slow down

for a second. Ryus (White Ghost) got away in front and the rest never caught him, but Garbutt and Winchester (Franklin) gave a contest that was not without exciting features, Garbutt finally winning. The time was 6:06.

Another interesting event was the seventh race, in which Oldfield in Bullet No. 2, appeared against Bruno Siebert in a Mercedes, T. L. Tincher in a Tincher, W. E. Saunders in a Toledo stripped for racing, and H. D. Ryus in the White Ghost. Oldfield ran around his field easily on the outer side of the track, and went after the Toledo and White, having lain back at the start. He soon ran down the big steamer and the fire engine followed. The ten miles were covered in 10:40 3-5, the time for the fastest mile being 57 seconds.

There were five starters in the race for the Chanslor Cup. George T. Stamm's "Coyote," a two-cycle, four-cylinder freak, refused to start. When the others finally succeeded in getting away W. E. Saunders (Toledo) took the lead and held it to the end. Edward Keller (Tincher) dropped out and Siebert (Mercedes) ran a good second. The time was 5:52 1-4 for the five miles. Keller, who drove the Tincher, had never raced in automobiles before this week, and he took risks in the heavy car that he will not soon forget. The Tincher is a four-cylinder tonneau car designed and built by T. L. Tincher of Chicago and is equipped with compression brakes and whistle.

A five-mile race open to all cars of 20 horsepower or less went to Winchester (Franklin) in a walkover, Garbutt's White steamer blowing out a steam connection and retiring. The time was 7:08 1-4.

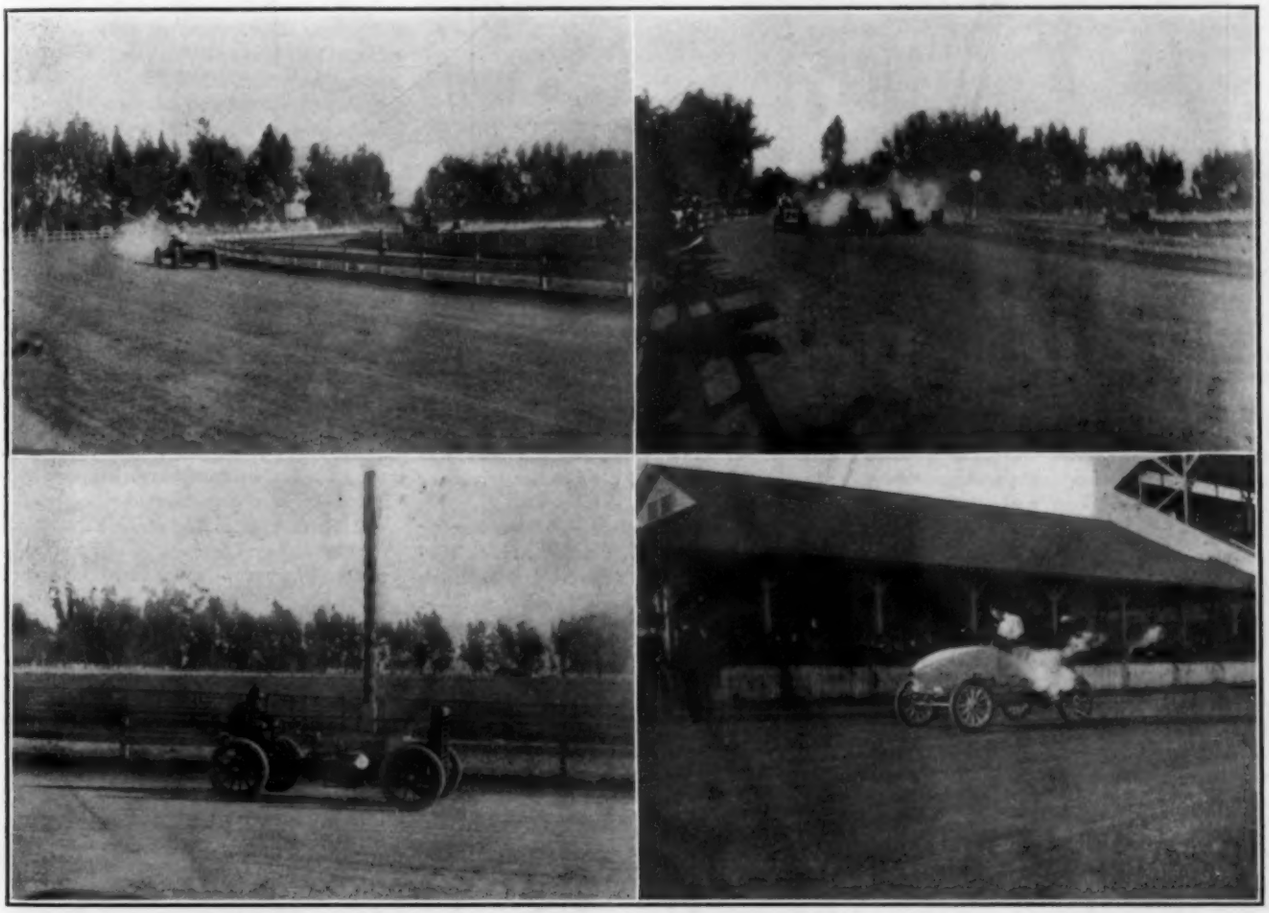
W. G. Hansen in a Tourist won the five-mile race for gasoline cars weighing 1,000 to 1,500 pounds with no restrictions as to stripping. He made a runaway from E. Cowan in a 6-horsepower Rambler, and Ross Foster, in a Shepmobile, quit. The time was 8:50 1-5.

W. F. Winchester in his Franklin ran away with the five-mile race for stock cars, distancing Cowan (Rambler), Hansen (Tourist), C. Clark (General) and Ralph Hamlin (Orient Buckboard), and an Australian pursuit race in which he caught Hamlin and Hansen within two miles with ease.

SATURDAY'S RACES.

The best event in the second day's program was the last race, a ten-mile free-for-all in which both the Bullets competed, Oldfield in the No. 2 and William Graham, a New York factory machinist, in the Baby Bullet (No. 3). The event was full of interest from start to finish. Barney trailed along close behind Graham for seven miles and then in the eighth mile he turned the big car loose. Graham knows a few things about clipping corners and crowding a car in the stretch, and he held the lead for another mile and a half. Then Barney opened up in earnest and his white shirt shot out in front like a streak (He spurned cap and red coat). The ninth mile was caught at fifty-eight seconds, and Oldfield started out as after a new record in the tenth. He went around the first turn with only two feet between himself and the fence, and fairly flew down the backstretch. When he struck the head of the stretch, he saw the Toledo and Tourist pounding away down the line, and as the race was already safely won, he jammed on the brake and slowed down to the wire. Even at that, the watches caught the time at 57 flat. Oldfield's time for the ten miles was 10:33.

An Australian pursuit race was run in two heats and a final. In the first heat the Toledo easily distanced the Tourist and caught the White Ghost at the end of six miles. In the second the fire in Frank Garbutt's White did not burn properly and



Oldfield at 3-4 Post in his Record Mile—54 4-5.
Hansen in his "Tourist" Racer.

Finish of First Mile in Five-Mile Race.
H. D. Ryus in the "White Ghost."

TRACK SCENES AT LOS ANGELES RACE MEET OF THE AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA.

he was caught in 2 1-2 miles by W. F. Winchester in the Franklin. The Toledo and Franklin then fought out the final, and

IN THE PADDOCK AT THE LOS ANGELES MEET.

the big car overtook its little opponent in six miles, in 8:23.

Interest was aroused to the highest pitch when Oldfield went for the fifteen-mile record in the Baby Bullet. Crouching down as low as possible under the steering wheel and steering with one hand, the daring driver tore off the miles in from 1:01 to 1:04 the total time for the fifteen miles being 15:44 4-5. But Henri Page established a world's record of 15:07 1-5 in the Decauville for the 1,800-pound class.

A world's record for steam cars was broken by H. D. Ryus in the White Ghost in his five-mile race against Oldfield in the Baby Bullet, although the steamer was outclassed and lost the race. Oldfield hung back slightly until the last mile, when he opened the throttle wider and won in 5:44 3-4. Ryus cut the corners close and finished in 5:50.

The Toledo, in a five-mile open, ran first in 5:58 1-5, with the White Ghost second and Garbutt in his White third. Stamm's Coyote was outclassed.

Winchester in the Franklin had a walkover in his race against the Tourist, General and Orient Buckboard. Time, 6:47.

Frank Hughes in a stripped Oldsmobile won a five-mile open from a Rambler and Ralph Hamlin in a Buckboard.

In the race for runabouts driven by members of the Automobile Club of Southern California, F. W. Flint, Jr., in a Stevens-Duryea ran away from A. W. Eager in a Rambler, who finished second, and George B. Ellis in a St. Louis, who ran last. Ellis came out looking very fierce with a cigar butt between his teeth, a la Oldfield, but in the matter of speed he was a poor imitation.

An amateur race for Winton touring cars was a slow affair won in 10:02 for the five miles by J. T. Ives, who won by half a mile from C. N. Herrich.

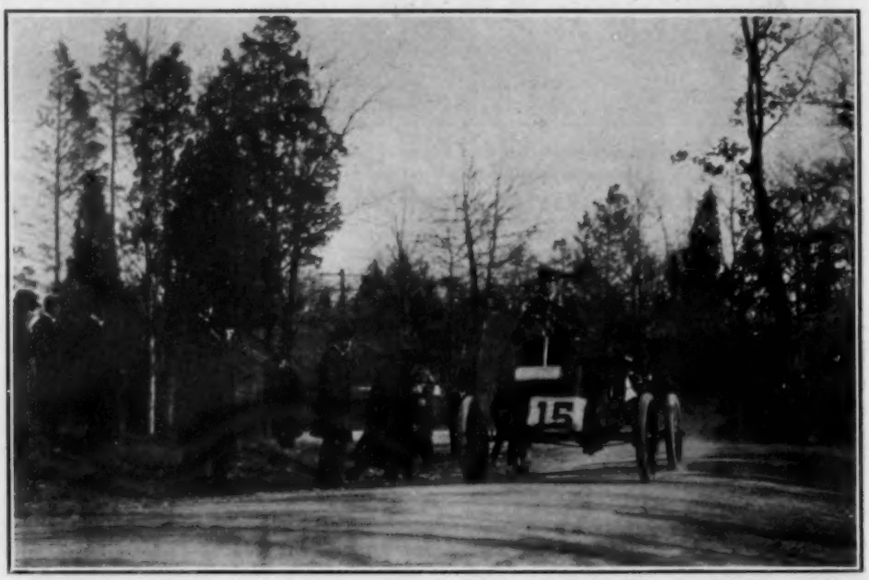
The Automobile Club of Southern California certainly deserves a great deal of credit for the orderly and businesslike way the meet was conducted. The paddocks were carefully walled in by a high board fence and no one, except on business, was allowed to crowd in or disturb the drivers or machines.

The officials were as follows: Racing Committee, Frank A. Garbutt, H. C. Turner, F. O. Johnson; Referee, Dr. Milbank Johnson; Judges, Homer Laughlin, E. T. Earl, Geo. B. Ellis; Timers, Maj. H. M. Russell, Dr. W. Le Moyne Wills, Dr. Wm. Dodge; Umpires, C. E. Crary, F. O. Johnson; Clerks of Course, A. N. Jung, A. W. Eager, F. L. Forrester, Howard J. Schoder; Weigher, E. W. Davies; Starters, W. G. Nevin, E. T. Stimson, H. C. Turner, Elmer E. Cole. A. L. Cheney; Mechanical Inspector, A. C. Stewart.

GORDON-BENNETT CUP COURSE CHOSEN BY GERMAN CLUB.

The Saalsburg course in Germany was officially decided upon for the Gordon-Bennett international race next year at a meeting of the German Automobile Club held November 28 in Berlin. The decision was made after a careful examination of the course by a special commission accompanied by Henri Fournier and René de Knyff, who went over the roads to report their condition to the Automobile Club of France. The course as selected lies near Hamburg and is from Saalsburg to Limburg, Oberursel and back to Saalsburg, making a circuit 139 kilometers 400 meters in length, or about eighty-five miles. The road lies in a picturesque section of wooded and hilly country. The experts who have examined the course pronounce it well adapted for the contest and much finer than the Irish course used last July, being wide and smooth. There are many steep grades, however, which will require the cars to have good brakes and mechanism for quick changes of speed. Fournier and De Knyff reported that the only serious objection is some sharp turns that will call for great skill on the part of operators. The start and finish will be at the top of a hill in Saalsburg, where a grandstand to accommodate 20,000 spectators will be erected. Elaborate arrangements for the safety of the public and the protection of the contestants will be made, the German club confidently expecting to secure governmental permission to hold the race on this course.

France, England, Belgium, Holland and Italy have already signified their intention to compete with Germany for the cup won this year by Jenatzy. The Automobile



CADILLAC CHASSIS AT SHARP TURN IN EAGLE ROCK HILL-CLIMBING CONTEST.

Club of America is awaiting the arrival of a reply to its letter of inquiry as to the eligibility of professional drivers who are not members of the challenging club, before American entries will be decided upon. If the answer is favorable, it is almost certain that Barney Oldfield will be entered to drive the Bullet No. 2. H. S. Harkness also asserted last Tuesday that he would undoubtedly make a trial for the American team, as he is having a new racing car built near Greenwich, Conn., that will be more powerful by twenty horsepower than the machine he built for last summer's race, but did not complete in time. Should American entries be received and the cars completed by that time, it is possible that the elimination trials for the American team will be held on the Ormond-Daytona beach during the February tournament there.

Entries for the race must be received by the controling organization in each country by December 31.

The French club rules for the eliminating trials allows any manufacturer to enter three cars upon the deposit of $1,000 for each machine. The course for the trials must be at least 550 kilometers long (344 miles) and not more than 600 kilometers (375 miles). The first three machines at the finish will be selected for the team to go to Germany, and they must be driven in the race by the same three men who run them in the eliminating test, which will be held, if possible, one month before the international race.

WASHINGTON-FREDERICK ROAD RACE WON BY OWESNEY.

WASHINGTON, Nov. 28.—Thirteen automobiles took part in a road race from the District of Columbia border to Frederick, Md., on the day before Thanksgiving. The starting point was on the Seventh Street road, and the route was through Olney and Newmarket to Frederick, a distance of forty-five miles. The course was rough and hilly and presented many difficulties for the contestants. The cars were divided into two classes, Class A embracing the runabout up to six and one-half horsepower, and Class B the larger cars up to twenty-eight horsepower. Blue ribbons were put up as prizes for the winners. Each machine was operated by its owner.

The first car was sent away by Starter Jose promptly at 9.30 a. m., and from then on they left at intervals of two minutes.

H. L. Owesney, in a Stevens-Duryea, won in Class B, after a rough and exciting run of 2 hours 6 minutes. R. B. Caverly, Peerless, was second in 2:09:30, and W. J Foss, Toledo, third, in 2:11.

F. B. Pyle, Cadillac, won in the runabout class in 2:13, with H. E. Doyle, Cadillac, second in 2:16:15, and F. P. Libbey, Oldsmobile, third in 2:18.

A Lecture in the Boston Motoring Course.

As outlined in the program of the Motoring Course organized by the Y. M. C. A. of Boston—which was published in full in THE AUTOMOBILE, October 31,—the lectures to be delivered during the month of November were to deal with steam cars only. The first of these lectures, by Parker H. Kemble, dwelt mainly upon the historical progress of the steam automobile. In the second one, also by Mr. Kemble, the subject of steam boilers was taken up in a manner interesting to wider circles of motorists, particularly as the treatment of the subject will indicate to many whether a "motoring lecture course" will be likely to meet their wants, and to other clubs and associations contemplating establishing schools for a similar purpose may suggest omissions, additions or changes, as compared with the plan of the Boston Y. M. C. A.

This lecture was in substance as follows:

MR. KEMBLE'S LECTURE ON BOILERS.

Several of those attending the course have in conversation with me expressed the intention of building experimental boilers at the conclusion of these lectures. Now, of course, it is very flattering to the lecturer to assume that in one lecture he can so place before you the essentials of boiler design as to enable his audience to forthwith build motor car boilers, but, unfortuately he cannot. The subject of successful boiler design is so intimately connected with strength and quality of materials, with the theory of heat and with that most essential knack of averaging conflicting requirements, that only the most prominent of these latter can be touched upon in the brief time allotted to this topic. Mr. Speare tells me that the Faculty have decided on Homan's Work on Automobiles as a text-book for this course. I am much pleased with their decision.

This and the following lectures of the course will be divided into two sections The first devoted to the lecture proper and the second to answering questions from the audience. Questions which would not be interesting to the majority or which would take too much time to answer, will be answered later in writing.

Before proceeding to a description of the different types, a few general principles are worthy of consideration. At first sight the only duty of a steam boiler seems to be to turn water into steam without killing any one. But in doing this it is not producing power, it is merely changing an inconvenient form of energy into a more flexible and usable form which can then be used to develop power. The heat contained in the wood, coal, coke, kerosene, gasoline, or other fuel that we burn under the boiler, is the active agent which drives the engine, the steam is merely the method of application in this particular instance. Take gasoline vapor for instance. Mix it with air and light it. You develop heat in the form of flame—an inconvenient form of energy. You place that flame under a boiler and transfer the heat to the water, which becomes steam, and there you have a convenient and flexible form of energy with which to develop power, but the heat of the flame and the heat of the steam are the same heat.

Take gasoline and mix it with air and explode it in the cylinder of the gasoline engine and again you develop power, though in jerky and less flexible form—but the heat of the flame and the heat of the explosion are the same heat.

Still further to illustrate this conveyance of energy in different mediums, when you have passed the heat from the fuel to steam pass the steam through an engine, let the latter turn a dynamo and pass the current of electricity through an arc light. Here you have the complete cycle from flame to steam, from steam to the engine shaft, from the shaft to the dynamo, from the latter to the arc, where it once more becomes flame.

Once get this idea that heat is the energy and steam the means of turning it into power clearly understood, and many things in connection with steam become clear. Steam pipes and boilers are covered with non-conducting coverings primarily to keep the heat inside, where it can be used in producing power and not wasted. Superheated steam will do more work because it is hotter, carries more usable heat in a given quantity.

In the design of a steam boiler there are certain requirements that must be constantly kept in mind. The transfer of heat from the fire to the water—as easy as possible—calls for thin metal of great conductivity. On the other hand safety requires thickness of metal and strength.

On applying heat to water, those parts just heated expand and, growing lighter than the surrounding water, rise to the top, their place being taken by the colder heavier water. This condition calls for plenty of room for the water to circulate, on the other hand, in order to heat the water quickly, it must be spread over as much surface as possible in thin sheets. This requires that the heat shall be passed through a large number of small tubes, as in the fire tube boiler, or else that the water shall be passed through a number of small tubes, as in the water tube boiler, in either case tending to restrict the circulation.

FIRE TUBE BOILERS.

This type of boiler consists essentially of a cylindrical shell closed at both ends by heads or tube plates and of numerous tubes varying in motor-car work from 3-8 to 5-8 inch in diameter running through it from end to end, through which the flame and heat go on their way to the chimney. The heads and shell are in the simpler forms of boiler made of steel, this being the lightest and strongest metal for the purpose. The tubes are usually made of copper as this metal passes the heat from the fire to the water more readily and while not as strong as steel is in its form of small tube with the pressure on the outside amply strong enough for pressures of 150 to 250 pounds. Above this the loss of strength of copper at high temperatures renders steel more advisable.

Another form of shell construction much used in light cars has the shell made of seamless copper pipe about .05 of an inch thick and is then wound with several layers of steel piano wire, the result being a great saving in weight, as the steel is applied so as to develop the greatest strength per unit of weight, good steel wire having a breaking strain exceeding 100,000

pounds per square inch as against about 62,000 pounds for steel boiler plates.

Where this construction is used the ends of the copper shell are flanged or bent out and the head laid on, then a steel ring is placed on the head, another under the flanged end, and the rivets pass through all four thicknesses, so that the joint between the head and flange is firmly clamped between the two steel rings. Further examples of construction of these small boilers are given in Homan's, pages 166-175. Where a steel shell is used, it varies from 3-16 to 5-16 of an inch, according to size of boiler and pressure required. It should not be forgotten that corrosion in the inside of the boiler is continually going on, and even in these small boilers designed for a comparatively short life from a thirty-second to a sixteenth should be added to the thickness required by strength to cover this waste.

A factor of safety of at least four should be used, that is, if the plate comes stamped 60,000 pounds tensile strength, a maximum of one-fourth or 15,000 only should be used in calculation, and one-fifth or 12,000 would be better.

In this matter of strength of shell it should be remembered that a riveted joint can never be as strong as the plate, the joint shown and recommended for this light work giving from 80 to 87 per cent. of the strength of the plate.

For a joint of this kind in 3-16 plate I should use 5-16 rivets spaced 4 1-2 diameters apart with all edge rivets 1-2 inch from center to edge of plate. The butt straps would be of 1-8 plate, the inner ones 6 1-4 inches wide.

While I am on formulas I might as well give one for the strength of shells. It is $S = \frac{Pr}{t}$ where S equals the safe working stress, P = boiler pressure, r = radius of boiler and t = thickness of plate. As an example, given a 1-4 inch plate for t; 200 pounds for P and 8 inches for radius: $\frac{200 \times 8}{1\text{-}4} = 6{,}400$ pounds.

As the tensile strength of good boiler steel varies from 55,000 to 63,000 pounds, this would give a factor of safety of 8 to 9. Even if 1-8 plate were taken, instead of 1-4, the strain would be on 12,800 pounds, and with steel of 62,000 this would be ample for strength, although for practical reasons 3-16 is probably as light as advisable to use. Incidentally this example shows why so few motor car boilers of this type blow up. It is, of course, possible to turn this formula round and make it read $t = \frac{Pr}{S}$ if you wish to work with a given strain and find your thickness.

As the diameter of a tube decreases, the thickness remaining the same, the ability to withstand pressure from the inside increases. In other words, as we decrease the diameter of a tube, the pressure remaining the same, we can decrease the thickness and weight of the tube and still retain the same strength. This leads us to a consideration of the water tube boiler which may be found in innumerable variations of form, but with the same general principle underlying them all; namely, that the greater part, if not all, of the heating surface shall consist of relatively small tubes with the water inside, which will at once fulfill two of the most important requirements in boiler design—maximum strength with minimum weight and division of the water contained into relatively small bodies in contact with a proportionately large area of heating surface.

In the fire tube boiler the comparatively large amount of water contained gives a steadiness of steaming, ahead of any other form under average conditions. The large amount of heat stored in the water acts as a flywheel in storing up or giving out energy according to the varying demands due to road conditions. There is more leeway in tending to the water level, as a variation of six inches in the gauge is permissible. On the other hand, if the water gets too low, unless the fusible plug acts exactly on time, it is quite probable that the boiler will need to see a repair shop before further use as a steam generator.

The water tube boiler carries much less water, and, while making steam quicker and standing forcing better, requires a more steady water level to be maintained, as a small amount contained will be used in a shorter time.

Another and perhaps the greatest advantage of both the water tube and flash boilers is that the steam pressure is practically unlimited. Pressures of 1,000 pounds are in use experimentally to-day, and with engines of the turbine type where cylinder lubrication is not a factor, there is no bar to higher pressures should the increase in economy warrant the extra cost of material. The power of these small boilers varies almost as the effective heating surface. In the fire tube the surface to be used in calculation is that of the tubes and one-half the lower head—the upper head and shell being of no account. One-half of the lower head only is taken, as the tubes in these small boilers cut out the other half. In this type of boiler eight square feet of heating surface should give a horsepower, and under especially favorable conditions this might be cut down. In the water tube type the capacity increases and we should look for three and one-half square feet of well-placed coil to give one horsepower.

Water tube boilers can be divided into two classes, those with natural and those with forced circulation. By forced is meant that some external means, such as a feed pump, is used.

In order to have natural circulation the path of the water must be reasonably free from sharp bends, reverse curves and downward bends after passing through the flame, otherwise on forcing the fire, steam will form in those bends and drive the water in both directions, interrupting the circulation, and if occurring where the heat is the greatest may lead to burnt-out coils. Even if no damage to the boiler results, the generation of steam will be irregular, and there is nothing more annoying than seeing the steam gauge pointer jumping fifty pounds up and then dropping back again.

For natural circulation, unless the tubes are so designed that the bubbles of steam will mechanically increase the velocity of the water, the tubes should not be over thirty-five calibers in length.

Where artificial circulation is used the designer has more freedom, he can reverse the circulation and bend his pipes as he wishes, bearing in mind, of course, that the more bends the more work for the pump and the less available power for propelling the car. If the length of pipe be sufficient all the water will be vaporized and nothing but steam will issue from it and the water tube boiler will have become a flash boiler. Somewhere between these two types unquestionably lies the boiler of the future. More of a water tube for marine and stationary work and more of the flash type for motor cars. In the water tube boiler the water level still requires watching to insure steadiness of steaming, although most of the boilers would not suffer greatly were they emptied for a short time. When we come to the flash or to the semi-flash boiler, the water-glass disappears and its place is taken by two automatic regulators. One of these cuts off the fire when the temperature of the steam reaches a certain point, the other regulates the water supply and is governed by steam pressure.

If the water gets low or gives out entirely, the whole boiler gets hotter until the temperature reaches the point for which the thermostat or fire regulator is set, when the latter cuts down the fire and saves the boiler from burning out.

The water regulator varies the amount of water according to the steam pressure, and the two work together beautifully. For example: A car fitted with a flash boiler and the above described regulator is running along with everything balanced and comes to a down grade. Steam is shut off by the driver and of course the pressure rises. As soon as it reaches a set point, the water regulator cuts off the water supply from the boiler and lets the pump discharge back into the tank. In the meanwhile the steam pressure is still rising and with it the temperature until the boiler is nearly or entirely empty and the thermostat cuts off the main burner, leaving the pilot light to keep things warm. At the foot of the hill the driver turns on steam and with the drop in pressure resulting, the water regulator opens and as soon as the water enters the temperature drops and the thermostat turns on the main burner again, and things are as they were before the hill came.

[Here the lecturer showed lantern slide views of various boilers from the period 1825-1845.]

We now come to the intermediate type partaking of the advantages of both the water tube and the flash. This represents the boiler designed by Rollin White. It consists of a series of coils of steel pipe joined end to end. The water enters at the top and somewhere down the line turns into steam, coming out at the bottom dry and superheated, ready for the engine. The thermostat controlling the fire is seen over the burner. This boiler, of course, belongs to the type of forced circulation.

The next boilers shown (lantern slide) are the more modern types of water tube boilers which have been successfully used on war vessels of various natures. Only those have been chosen for illustration which from structural form could be applied to motor car use.

The first, the Field boiler, is worthy of mention as being the prototype of the Collet and Niclausse and Durr boilers and other similar types.

The steam generation is very rapid, but irregular, when forced, as, with the tubes all opening into a general chamber, the steam, issuing from the outer tubes, often cuts off the water from the inner tubes, and the latter are apt to fill up with scale, in consequence.

In the Seaton boiler the tubes are divided into large elements or sections, each of which is complete with steam and water drum. These sections are then connected by a common drum across the top and a water pipe at the bottom. For motor car use the steam drum would have to be omitted to save height and a steam pipe tapped into each drum. The upper drum would be less required, as a motor car does not ordinarily pitch or roll as a vessel does. The ends of the water spaces are bolted on to allow access to the tube ends.

The Durr boiler used in the German navy is of the Field type. The generating tubes are connected to a single flat water space and the full width boiler. It will stand forcing.

The D'Allest boiler has not given satisfactory results on salt water, but has proven

successful in steam carriages in France. It is heavy for a water tube boiler. It consists of an inside cylindrical water reservoir connected by tubes to an outer circulating water space. It is a cross and a successful arc between the ordinary fire tubes and a water tube boiler.

The '96 type of D'Allest boiler would make a very good motor car boiler if provided with a faithful water regulator and with the drum and rear water space made in halves bolted together for ease of access to the tubes.

The Symon-House boiler was designed for use with a kerosene burner on small launches, and has proven successful in England. The tubes are of copper and are attached to the reservoirs at both ends by unions so that any tube can be readily removed. The weight, with water and mountings for a 20-hp. boiler is 337 pounds, an average of eighteen pounds per horsepower. When designing removable joints place them away from the direct flame of the fire.

[The lecturer showed lantern slide illustrations of all of the boilers above mentioned, and pointed out the water circulation in each.]

A Word on Superheating.

Steam as it rises from water contains a certain amount of water in suspension. For reasons uninteresting to most of us this water is not a good thing. Further than that, it is detrimental to the efficiency of the engine. If we add enough heat to this steam we can vaporize that water and bring the steam nearer to being a perfect gas. Stanley in his fire tube boiler employs a very clever method of superheating, but one that requires a pretty thorough knowledge of the theory of steam to understand. White in his semi-flash boiler gets the desired result by making his coil long enough to superheat the steam after it has formed.

The flash boiler in its most extreme form is the Serpollet system. This boiler consists of a series of tubes flattened until the passage is but a thirty-second wide and then coiled. These tubes are made in various shapes, those shown being among the earlier types. For an illustration of a later type I will refer you to Homan's, pages 201-2.

Gauge glasses, the next thing on the list, are an unmitigated nuisance, they break when they ought not to, they get stopped up and let the boiler burn out when you trust them too long, and they keep you busy watching them when you had rather be watching the scenery or your companion. They should be connected to the boiler by short straight pipes, the lower at the bottom of the boiler and the upper at the top. It is essential that they have separate pipes of their own in order to register correctly.

They should be cleaned or blown through regularly to make sure and keep sure that the pipes are all clear. A frequent cause of trouble is found in the rubber washer that packs either end of the glass not being in square and swelling under the influence of the hot water, thus stopping up the lower end of the glass. There should always be some independent way of testing the level of the water.

Check and Feed Valves.

[Here the automatic check valve was shown and described.]

Personally, I invariably take out the checks, as they are liable to stick and cause trouble. Safety valves should be adjusted at the factory and afterward left alone. They should be connected to the top of the boiler, but had bette. be placed below everything where they do no damage when they blow.

Feed valves need cleaning every little while and care should be taken to see that the movable part and seat have not worn out of shape. The usual amount of lift is about 3-64 of an inch.

The mechanism of a steam gauge is simple, but easier explained from a specimen than from the platform. It must be so connected to the boiler that there is always a cushion of water between the steam and the gauge.

[From *Das Schnauferl*, Munich.]

At the Race Meet.

"Why so proud to-day, Mr. Puffenblow, did you win the handicap?"

"Not that, exactly, but the victor's machine was fitted with lamps from Puffenblow Bros. & Co.

Text of Brownlow's Good Roads Bill.

While the Brownlow Bill, looking to the creation of a Bureau of Public Roads in the Department of Agriculture, was introduced in the Fifty-Seventh Congress for the purpose of bringing it to public attention, it has now been re-introduced with a view to bringing it up for discussion and passage at the earliest possible moment. It is now in the hands of the Committee on Agriculture.

Considering its importance to motorists and the people in general, its text is herewith given in full.

A BILL

To create in the Department of Agriculture a bureau to be known as the Bureau of Public Roads, and to provide for a system of national, State, and local cooperation in the permanent improvement of the public highways.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be in the Department of Agriculture a bureau to be known as the Bureau of Public Roads.

Sec. 2. That the object and purposes of said Bureau shall be to instruct, assist, and cooperate in the building and improvement of the public roads, at the discretion and under the direction of the Director of said Bureau in such States, counties, parishes, townships, and districts in the United States as shall be determined upon by said Director. The general policy of such Bureau shall be to bring about, so far as may be, a uniform system of taxation for road purposes, and a uniform method of road construction, repair, and maintenance throughout the United States, and to cooperate with any State or civil subdivision thereof in the actual construction of permanent highways.

Sec. 3. That said Bureau shall be under the management and direction of the Secretary of Agriculture, and shall consist of one Director of said Bureau, who shall receive a salary of four thousand five hundred dollars per annum; one Assistant Director, who shall receive two thousand five hundred dollars per annum; one chief clerk, who shall receive two thousand dollars per annum; one clerk, who shall receive one thousand five hundred dollars per annum; one messenger, who shall receive seven hundred and twenty dollars per annum; four field experts, who shall receive two thousand dollars per annum each; four civil engineers, who shall receive one thousand eight hundred dollars per annum each; four road experts, who shall receive one thousand four hundred dollars per annum each; one assistant, in charge of road-material laboratory, who shall receive two thousand five hundred dollars per annum; one engineer, who shall receive two thousand dollars per annum; one chemist, who shall receive one thousand eight hundred dollars per annum; one petrographer, who shall receive one thousand two hundred dollars per annum; and such other officers, agents, and servants as the director may from time to time require for the purpose of carrying into effect the provisions of this act.

Sec. 4. That there shall be appropriated for the maintenance of said Bureau and the use thereof, out of any money in the Treasury of the United States not otherwise appropriated, the sum of seventy-five thousand dollars for the salaries herein provided for and for the following items: The general expenses of said Bureau; to enable the Director, under the direction of the Secretary of Agriculture, to make inquiries in regard to systems of road building and management throughout the United States; to make investigations and experiments in regard to the best methods of road making and the best kind of road-making materials; to cooperate in the building of object-lesson roads in the several States, in accordance with the plan hereof; to employ local and special agents, clerks, assistants, and other labor required in conducting experiments and collecting, digesting, reporting, and illustrating the results of such experiments; to investigate the chemical and physical character of road materials; to purchase necessary apparatus, materials, supplies, office and laboratory fixtures; to pay freight and express charges and traveling and other necessary expenses; to prepare, publish, and distribute bulletins and reports on the subject of road improvement; to enable him to instruct and assist in the building and improving of the public roads and highways in such States, parishes, counties, townships, and districts in the United States as shall determine to follow the plans and methods directed and determined upon by the Director of said Bureau; and to enable him to disseminate information on the subject of improved roads.

Sec. 5. That if the governor of any State does not apply within thirty days after adjournment of the next legislature in that State after the passage of this Act for national aid in building roads under this Act, the proper officers having jurisdiction of the public highways in the civil subdivisions of said States may apply for the aid of the Government as provided for in this bill. Every application for the cooperation herein provided for shall be accompanied by a properly certified resolution, adopted by the body having jurisdiction over the highway to be improved, stating that the public interest demands the improvement of the highway described therein, but such description shall not include any portion of a highway within the boundaries of any city or town whose population, according to the census of nineteen hundred, shall exceed fifteen thousand inhabitants.

That any State having in operation a State aid highway improvement law, which is satisfactory to and approved by said director, may through its proper officer or officers having jurisdiction of the building of public roads apply to said director for cooperation in the actual construction of its public highways, and the said director may at his discretion use said officer or officers in surveying, planning, and constructing said highways.

SEC. 6. That the Director of said Bureau, upon receipt of any such application, shall investigate and determine whether the highway or section thereof sought to be improved is of sufficient public importance to come within the purposes of this Act, taking into account the use, location, and value of such highway or section thereof for the purposes of common traffic and travel, and for the rural free delivery of mail by the United States Government, and after such investigation shall certify his approval or disapproval of such application. If he shall disapprove such application he shall certify his reason therefor to the public officer or officers making the application.

SEC. 7. That if the Director of said Bureau shall approve such application, he shall cause the highway or section thereof therein described to be mapped, both in outline and profile. He shall indicate how much of such highway or section thereof may be improved by deviation from the existing lines whenever it shall be deemed of advantage to obtain a shorter or more direct road without lessening its usefulness, or wherever such deviation is of advantage by reason of lessened gradients. He shall also cause plans and specifications of such highway or section thereof to be made for telford, macadam, or gravel roadway, or other suitable construction, taking into consideration climate, soil, and material to be had in the vicinity thereof and the extent and nature of the traffic likely to be upon the highway, specifying in his judgment the kind of road a wise economy demands. The improved or permanent roadway of all highways so improved shall not be less than twelve nor more than twenty-four feet in width, unless for special reasons it is required that it shall be of greater width.

SEC. 8. That upon the completion of such maps, plans, and specifications said Director shall cause an estimate to be made of the cost of construction of the road intended for improvement and transmit such estimate to the officer or officers from whom the application proceeded, together with a certified copy of said maps, plans, and specifications, including a certificate of his approval of the highway or section thereof so designated as aforesaid.

SEC. 9. That after the receipt thereof the official or officials making the application may file with the Director of said Bureau a second application, properly certified, stating that such highway or section thereof so approved shall be constructed and maintained according to the provisions of this Act, and that the necessary resolution or resolutions to provide for such portion of said estimated cost as by the provisions of this Act shall be borne by the State or civil subdivision thereof within which the highway or section thereof to be improved is located has been adopted.

SEC. 10. That in case the boundaries of such proposed highway shall deviate from the existing highway, the officials making the application must provide for securing the requisite right of way prior to the actual commencement of the work of improvement.

SEC. 11. That upon receipt of the application and certified copy of the resolution provided in section nine, said Director shall advertise for bids for two successive weeks in a newspaper published at the county seat of the county in which the road is to be built, and in such other newspapers or journals as shall be deemed of advantage for the construction of such road or section thereof, according to said plans and specifications, and shall award such contract to the lowest responsible bidder, except that he may in his discretion award the contract to the State or civil subdivision thereof making the application, and except that no contract shall be awarded at a greater sum than the estimate provided in section eight.

SEC. 12. That one-half of the expense of the construction thereof shall be paid by the Treasurer of the United States upon the Warrant of the Comptroller, issued upon the requisition of the Director of said Bureau, out of any specific appropriations made to carry out the provisions of this Act, and one-half of the expense thereof shall be paid by the State or civil subdivision thereof making application for the cooperation provided for herein: *Provided*, That nothing herein shall be construed to prevent the State or civil subdivision thereof from distributing the said one-half so that the State may pay a portion, the county or parish a portion, the township or district a portion, and the owners of the land abutting upon said road another portion: *And provided further*, That no money be advanced by the United States in payment of its portion of the cost of construction as provided for herein, except as the work of actual construction progresses, and in no case shall the payment or payments made thus prior to the completion of the work be in excess of eighty per centum of the value of the work performed, but in all cases twenty per centum must be held until the completion of the work, according to the plans and specifications and to the satisfaction of the director of said bureau.

SEC. 13. That every State or civil subdivision thereof availing itself of the advantages of this Act shall, because of having accepted such national aid, contract and bind itself to maintain and keep said roads in good and efficient repair for the free use of the public.

SEC. 14. That for the specific purpose of carrying out the cooperation and actual construction provided for herein, and for the maintenance of said Bureau of Public Roads, there is hereby appropriated, out of any money in the Treasury of the United States not otherwise appropriated, the sum of twenty-four millions of dollars, the said appropriation to be available at the rate of eight millions of dollars a year during the years nineteen hundred and four, nineteen hundred and five, and nineteen hundred and six. If any of the appropriation herein made is not expended in the year named, that portion not expended shall become available the succeeding year. This appropriation shall be distributed in the following manner: States having a population of less than seven hundred thousand inhabitants are to each receive the sum of two hundred and fifty thousand dollars. The remainder of the appropriation shall be distributed pro rata among the States having a greater population than seven hundred thousand, each of said States to receive a sum equal to the proportion its population bears to that of the total population of said States having a population of over seven hundred thousand. These figures as to inhabitants of each State are to be based on the census of nineteen hundred: *And provided further*, That should any State or civil subdivision of any State not avail itself of the amount of money apportioned to it under this Act prior to January first, nineteen hundred and seven, its right to secure this money is to be forfeited, and all moneys so forfeited are to be reapportioned among all other States, and among civil subdivisions of other States, which have applied for national aid under the provisions of this Act.

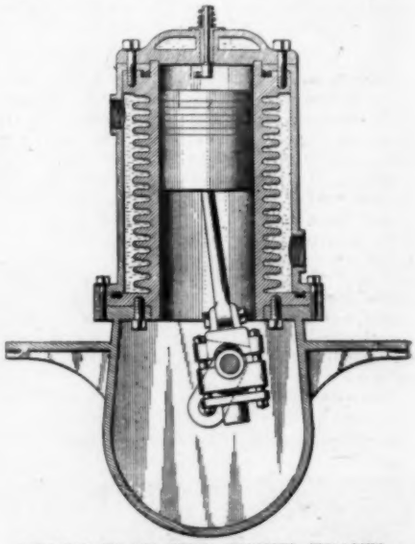
Round the World With His Auto.

Elmer E. Smathers, millionaire broker and racehorse owner, has in contemplation an automobile tour around the world. The itinerary includes a railroad journey from New York to San Francisco, starting on January 16, and a sea voyage to Honolulu. After a short tour on the island of Oahu the party will re-embark for Nagasaki, Japan. Several weeks will be spent in the "flowery kingdom," and then a short trip will be made in the territory surrounding Hongkong, China, and a brief visit to Manila. Returning, the trip will be continued to Calcutta, through India to Bombay, and then by boat to Cairo. Touring through Italy, toward Paris, short side trips will be made to Monte Carlo, and other points of interest, thence to the French capital, and from there to London. An extended tour through England will terminate the trip, in an automobile sense, and the tourists will then return to New York.

Mr. Smathers is having a high-powered car built to his order, which is expected in New York not later than January 1. J. S. Gatens, a business associate, and another friend will be Mr. Smathers' guests. The car will be driven by Horace Bradley, a Harvard graduate, at present a tutor in Newport.

Interrupted Piston Travel.

The accompanying illustration represents the invention of B. G. Holz of McKees Rocks, Pa., to which he desires to call the attention of the automobile world. The object of the design is that the piston shall be held momentarily at the innermost point of its travel and start its outward movement when the crank is about 20 degrees past the dead center. By this means the inventor aims to obtain a more thorough mixing of gasoline and air and to give



HOLZ'S PLAN FOR PISTON TRAVEL.

the igniter a longer time to explode the compressed charge. His idea is that the igniter should be set to explode at any desired point after the dead center.

The innovation of Mr. Holz would perhaps be looked upon with more confidence if his motor design did not show a ribbed cylinder with a water jacket around; an arrangement which has never before been thought in any sense advisable, since the ribs would interfere with the water circulation, the castings are made more difficult and heavier and no gain in conductivity is obtained by having metal ribs rather than an equivalent volume of circulating water.

Fifteen new members were admitted in the Automobile Club of America at its last meeting.

At the annual meeting of the Monmouth Automobile Club of Asbury Park, N. J., held November 23, new officers were elected as follows: President, George B. Frisbie; vice-president, Nelson H. Kilmer; secretary-treasurer, George W. Pittenger; captain, C. R. Zacharias.

Correspondence

Portland Cemetery Excludes Autos.

Editor THE AUTOMOBILE:

Your letter by Mr. G. E. Rhedemeyer, "Autos in Cemeteries," interested me on account of this same foolish rule being enforced in Evergreen Cemetery of this city. I was talking with one of our judges a short time ago on this very matter, and he was of the opinion that I had as much right to visit my lots in my auto, if I chose, as by any other means and stated positively that there was no law known to him that would interfere. I have always been rather proud of my State and city's action in matters of this sort, and think an automobilist is as free here as one could reasonably wish. Our State law is as liberal as necessary and wherever you go you will find great interest shown in the automobile. In my four years as an automobilist, with over 17,000 miles to my credit, this sign, "Horseless Carriages Not Allowed," at the entrance of this cemetery is the only one of its kind I have ever met in this State

In a number of cases I have seen signs requesting automobilists to "go slow," but this is the only case I know of where the use of the road is denied the automobile.

HENRY R. STICKNEY.

Portland, Me., Nov. 23.

Would Learn About Automobiles.

Editor THE AUTOMOBILE:

I am greatly interested in the automobile industry and would like to obtain a thorough and practical knowledge of automobiles, with a view to securing a position in a salesroom, or something of that sort. Now what I wish to ask is this: How and where can a young man secure such an education as I speak of? Would a repair station be the proper place to begin? If you will be so kind as to write me a letter, giving me information along this line, I will appreciate it very much.

C. C. MILLER.

Mitchell, S. Dak., Nov. 24.

Quite naturally our correspondent infers that the salesman should have a thorough and practical knowledge of the automobiles he sells. In practice, however, this is not by any means required. If the salesman knows "all about it," he is likely to lapse into dissertations with customers rather than keeping his weather eye on the man's pocketbook. Also, he is apt to hesitate in his statements instead of boldly asserting the merits of his ware. Real superior knowledge makes a man moderate in his claims, and modesty, in this sense of the word, seems to be considered the very anti-climax of salesmanship. The suggestion of our correspondent to go into the repair business first, so as to learn the intricacies of car mechanism at the expense of their owners, is strictly in accordance with the usual practice. Hundreds of young men have left a trail of experimental repairs to witness how successfully they adopted this short road to mechanical insight. If their repairs were not always admired, their assurance was—and a young man with plenty of assurance can always get a job and hold it till he can get another.

For young men with more than average conscientiousness, it might be added that the machinist's trade, well learned, and the engineer's profession, duly acquired, are good stepping stones to the automobile repairman's and the automobile designer's work, respectively. We know of no shorter road for an ordinarily endowed person. The genius, however, may leap where common mortals crawl; and everybody, we believe, has the privilege of considering himself a genius so long as he can maintain the illusion.

What Determines Horsepower.

Editor THE AUTOMOBILE:

I would like to know if the size of the bore and length of the stroke of the motor determine the power of the motor? I have noticed that there are machines of different manufacturers having the same bore and stroke but with different estimated horsepower. Can this be so or are some of these motors over-rated?

F. F.

Lorain, O., Nov. 24.

Other factors than bore and stroke have much to do with the power, also; especially the degree of compression of the explosive charge and the dimensions of the valve ports. The piston speed and the number of revolutions per minute are largely determined by these factors, and, other things equal, the power developed is proportionate to the number of revolutions per minute.

Robbins Holds Buckboard Record.

Editor THE AUTOMOBILE:

We noticed with considerable interest an article which appeared in one of the recent issues of your journal, and the statement of the Sunset Automobile Club of California, in reference to Dr. Kellogg's records on his Orient Buckboard in the Del Monte races of August 17 being considerably lower than the time of our Mr. Moffett in the Cleveland races September 5, together with a statement to the effect that to California belonged the honor of being "the" field for automobile sport.

The beginning of the Buckboard records dates back as far as May 30, 1903, when Mr. J. C. Robbins, of the Waltham Manufacturing Company, drove a mile on an Orient Buckboard in 1:39 flat, and five miles in 8:35, at the Empire State track, Yonkers, N. Y. This record has never been approached either for one or five miles, although B. J. Ruetenik, of Cleveland, on a regular stock machine rode three miles at the Grosse Pointe track, Detroit, Mich., September 8, in the remarkably swift time of 5:12 2-5, under the most adverse track and weather conditions.

We might also mention that Howard Gill rode five miles at Baltimore, September 12, on a narrow one-half mile horse track in 10:02, which in itself is a record for a half-mile track for these little machines.

LAKEWOOD AUTOMOBILE CLUB,
THOS. L. MORRISON, Sec'y.

Lakewood, O., Nov. 17.

Fighting Missouri's Bad Law.

Editor THE AUTOMOBILE:

I have been fined $100 by the Ralls County authorities for running my automobile without a license. I have a license for which I paid $2, and, thinking it was for the State, I made a trip to New London, Mo., the county seat of Ralls, and got the above fine. Let this be a warning to automobilists intending to make tours through Missouri. This State has 100 counties or more and you can readily see that it would be much cheaper to ride on the train than pay $2 for each county, besides the trouble of keeping track of county lines and changing numbers every few miles.

Every automobile owner in the State should be interested in breaking this malicious law, and I take this method of letting them know that I have carried the case up to the Court of Appeals in St. Louis. I understand it will come up next March for final decision. Any assistance the automobilists of this State can give will be thankfully received.

R. W. COBB.

Hannibal, Mo., Nov. 30.

E. R. Hibbard of Oak Park, Ill., and Chicago, an expert on the languages of animals, has made the interesting discovery that automobiles have a language. Mr. Hibbard says: "For many years I have made a study of the languages of animals. I speak cat and dog fluently, understand a little of both bull and bear, and am able to make myself understood by hogs, especially end seat hogs. I am now satisfied that my automobile is a linguist, in comparison with any of these animals. I first noticed that it squealed for oil and grunted for gasoline and purred when it was running along all right. Now I'm going to make a study of the automobile language to see if all cars talk alike. I think that, perhaps, gasoline cars have one language, and electric and steam vehicles different modes of expression. Of course, research may prove that all this is hot air."

The army is to have an automobile battery wagon. It will be wise to keep it well in the rear when the army is on the march.—Carette, Ind., *Herald.*

THE AUTOMOBILE

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SATURDAY, DECEMBER 5, 1903.

"WEARY OF AUTOMOBILING."

A little tempest has been fanned up in Ohio automobile circles. There appeared an article, labeled as a special cablegram from Paris, and entitled "Parisians Weary of Automobiling," in the *Ohio State Journal* of Columbus. On the principle that "As Paris goes, so goes the world," this article seemed to foreshadow the decline of automobilism in Ohio; and that was what caused the tempest. But the article belonged to that class which forms the specialty of transatlantic correspondents when news is slack. "Important, if true," is the term under which the class is commonly known, with emphasis on the "if." Most metropolitan newspapers gladly accept cablegrams of this particular character, because the responsibility for their correctness can be shifted to the European news agencies, and because the subsequent denial makes almost as good reading as the first story, while at the same time affording an opportunity for a fine, moralizing diatribe against the unscrupulous gang of news fabricators who made it up.

In this instance the article in question is not properly the subject for a cablegram, as there is no tangible news in it, but it merely pretends to sum up a situation. It reads as follows:

[Special Cable to *State Journal*.]

PARIS, Nov. 21.—Parisians cannot very long remain faithful to any fad, especially if it goes against their vanity, and as automobiling at sixty miles an hour necessitates a ost ugly costume to protect against wind and dust, the enthusiasm for this sport is on the wane.

The dealers in automobiles are all complaining that this season, which was looked forward to with great expectations, has been a pronounced failure.

People no longer want to pay thousands of francs for an automobile and if it had not been for the Americans, as one prominent dealer said, very few dealers would have been able to pull through.

The airship is going to take the place of the grimy automobile, of this there is no doubt

The recent fifty-mile trip of the Lebaudy airship and the daily sight of Santos Dumont circling like an immense bird high in the air beyond all dust and stench of gasoline have filled the hearts of the Parisian aristocracy with new hope and ambition, and the prediction has been made that in five years the airships will be as common as the autos are to-day.

It will be noticed that there is a clever mixture of fact and fancy in this surprising advice from Paris, but the facts hardly warrant anxiety for the Ohio trade. Treating the subject perhaps more seriously than it deserves—since some persons have actually taken alarm and the article has been copied in a number of Western newspapers—it may be well to admit first of all that automobiling as a fad is bound to fluctuate. If a person who has no rational use for a conveyance of any kind buys a motor vehicle simply because it is the fashionable thing to do, he is likely to find out after a while that there is a limit to the enjoyment to be derived from any aimless driving of a machine. Quite probably he will become "weary of automobiling." A certain small contingent of those who own automobiles in Paris may be in that situation. No doubt it is, as a rule, precisely the same small class of persons—more numerous in Paris than elsewhere—who have paid fancy prices for cars. If the French industry has catered too much to this class it very properly suffers for its bad judgment. And it need not be denied that the trade in high-priced automobiles in Paris this year has been disappointing in many quarters. Confirmation of this report has come from other sides, but with the very important modification that the falling-off in trade suffered by a number of dealers is fully offset by a great increase in the trade of a few in whom the public have learned to have confidence. There is concentration of trade, but not diminution. So, while it may be freely conceded that those who treat automobiling as a fad will in course of time seek new pastimes, there is no reason for believing that they have given the fad up as yet, but rather that they have specialized it by refusing to drive any cars that have not received Dame Fashion's stamp of approval.

The little untruth in the cablegram, on this point, lies in the statement that "the dealers are *all* complaining." About two years ago the Parisian trade had come to a deadlock by reason of high prices, but it revived almost immediately when the cause was removed and the small car was introduced and has since moved gradually toward higher prices again, thereby simply attesting that the demand is ever active when the trade supplies the popular wants.

The reference to Americans as the saviors of the Paris dealers must appear particularly absurd to the importing firms in New York who very well know that the number of French 1903 machines sold for export to this country does not exceed 300 and that England absorbs at least five times as many.

The question of the dying fad and the dwindling trade may safely be left to the rational consideration of Ohioans and other Americans who have learned—as plainly shown in our types of automobiles—that fancy and fad are not the governing factors in our trade and industry, and that nine cars out of ten are sold to persons who have use for them and find them not only more convenient and economical than horses, but possessed, also, of a much wider range of usefulness that renders them available and desirable in many situations which would not warrant the maintenance of a stable of ever-feeding animals.

Ups and downs of Parisian fads can have no influence upon American trade conditions so well founded, except perhaps to caution manufacturers against too close following of fashions and to encourage them to develop types of cars which will serve the thousands of varying business requirements to which automobiles may be adapted.

"It is to laugh" when we are now told that dirigible balloons or flying machines in five years will be as common as automobiles are now. Imagine a garage for balloons. Each balloon requires a shed from 100 to 150 feet long and 40 feet high. A nice structure in a man's backyard! This shed, too, must be braced with guy wires reaching far on both sides, lest the flimsy edifice collapse on top of the balloon in the first storm. The gas bag itself has repeatedly been declared a public nuisance in French courts owing to leakage of its contents and nasty odors from the chemicals used in producing the gas. The Parisian correspondent who fables about the odor and grime of automobiles seems to forget conveniently that the balloons in which Lebaudy and Santos Dumont take their aerial flights are propelled by gasoline motors, too. And he evidently does not know, or care to say, that the balloon is useless and dangerous in a moderate breeze, and by the most successful experimenters, is never taken out when the wind blows more than eight or ten miles per hour. To be sure, it can be sent up when the velocity of the wind reaches even twenty to twenty-five miles, but it ceases then to be dirigible.

Motorists probably would not like to be confined to their homes on all but calm days, neither would they relish to land in St. Louis when they had set out for Chicago; not so long as they may have automobiles that will take them wherever they want to go and in any kind of weather.

With all respect for the inventive skill of this age, it seems hardly possible to look for the flying machine to become one of

the utilities of mankind, before the leading principle of aerial support and locomotion shall have been discovered. At present the flying machine stands about where the gasoline engine stood when the steam engine was invented.

Those who understand balloons best—Santos Dumont, Lebaudy, Dr. Barton, etc.,—employ them now principally as a means for experimenting with aeroplanes. All illusions as to the use of balloons in the eventual solution of the aerial problems, have practically been abandoned by them. They hope gradually to reduce the size of balloons and to substitute flat surfaces forced through the atmosphere at a small angle with their own planes. But the supporting effect of this motion depends upon its velocity. When not rapidly propelled an aeroplane machine falls. And its large area causes immense difficulties in preserving its equilibrium in strong air currents.

A large number of facts in nature furnish strong evidence that the propelled aeroplane alone, or in conjunction with balloons, will never constitute the essential feature of a successful flying machine or of anything that can possibly take the place of automobiles for purposes of utility. It will form a part of the solution of the problems, but only a part, and the other features by which it may become possible to so reduce the areas and dimensions as to bring the flying machine within the range of practical usefulness, are still secrets of nature.

The more the aeroplane departs from horizontal motion the weaker its powers to support; but the sparrow possesses the power to fly vertically. Its secret must first be wrested from it, before man may fly in safety.

The unpropelled aeroplane falls, but large masses of water-laden clouds, much heavier than the surrounding atmosphere, hang motionless in the air for hours; their secret, too, must be probed and laid bare.

Until these and other things shall have been done, the automobile remains secure as the greatest practical modern triumph in the realm of locomotion.

Street Cleaning Commissioner Woodbury of New York, and his superintendent of stables, T. H. Shanton, are to be provided with automobiles at the expense of the public treasury, in the near future. Mayor Low approved a special appropriation of $4,000 for this purpose on November 22, and signed an ordinance authorizing their purchase. A careful search of the records by the city clerk shows that this is the first time in the history of New York that an automobile is to be furnished an official from the public treasury funds.

American and Foreign Automobile Fixtures for the Winter.

1903.
Nov. 15.—Alcohol Heavy Vehicle Trials. German War Office.
Dec. 10-25.—Sixth Annual International Exposition of Automobiles and Cycles at Paris. Grand Palais. Automobile Club of France.
Dec. 31.—Closure of Entries for 1904 Gordon-Bennett Race.
1904.
Jan. 16-23.—Fourth Annual Automobile Show, New York. Madison Square Garden. National Association of Automobile Manufacturers, Madison Square Garden Company and Automobile Club of America.
Jan. 23-Feb. 4.—International Automobile Exhibition at Brussels.
Jan. 26-30.—Philadelphia Automobile Show.
Jan. 25-Feb. 6.—Racing Tournament at Daytona, Fla. Ormond-Daytona Sea Beach. Florida East Coast Automobile Association.
Feb. 6-13.—Fourth Annual Automobile Exhibition, Chicago. Coliseum Building. National Association of Automobile Manufacturers and Chicago Automobile Club.
Feb. 12-24.—Second Annual Automobile Exhibition. Crystal Palace, London. Society of Motor Manufacturers and Traders.
Feb. 15-20.—Third Annual Exhibition at Detroit. Detroit Light Guard Armory. Tri-State Automobile and Sporting Goods Association.
Feb. 29-Mar. 5.—Cleveland Automobile Show.
Mar. 6-12.—Second Annual Buffalo Automobile Show. Convention Hall. Automobile Dealers' Association of Buffalo.
Mar. 14-19.—Third Annual Automobile Show, Boston. Symphony Hall. Boston Automobile Dealers' Association.
Mar. 17.—Start of Touring Trials. Paris to Rome, organized by La France Automobile.
Mar. 19-26.—Motor Car Exhibition, London. Agricultural Hall. Cordingly & Co.
Mar. 20.—Opening of Automobile Festival at Nice, France.
Mar. 21-26.—Fourth Annual Washington Automobile Show. Washington Light Infantry Armory. Washington Automobile Dealers' Association.

H. S. HARKNESS SETTLES RUMORS AND TALKS OF HIS PLANS.

The first explanation that has been made of the failure of Harry S. Harkness to start in the Paris-Madrid race last May with the special racing machine which he built in Brooklyn primarily for the elimination trials to qualify on the American team for the Gordon-Bennett international race, was given last Tuesday in an interview with a reporter for the New York *World*. Although Mr. Harkness returned from Europe last fall, he has not appeared in any of the American races, but many rumors have been current of his intentions, first in connection with the transcontinental race proposed by D. H. Nelson Jackson, who was the first person to cross the continent in an automobile, then as a probable manufacturer of automobiles at Greenwich, Conn., and lastly as a possible member of the American Gordon-Bennett Cup Team for 1904. These various rumors were denied or confirmed in the interview, as follows:

"I shall undoubtedly make a trial for the team. It is not true that I am designing cars at Greenwich, Conn., but not one hundred miles from there some work is being done. I am anxious to build a car stronger by twenty horsepower than my present car. The present car is fast enough for level roads, inasmuch as on first speed I got away at forty miles to the hour, and can do eighty, but with the added twenty horsepower it will be possible to negotiate the hills much better.

"My present car was not light enough (to comply with the rules) for the last race, anyway, and it was too heavy for the Paris-Madrid race, for which I was entered. They held me up in the French customs for ten days, and then we worked night and day to lighten the car, cutting off every other tooth of the sprocket, and even boring holes in the teeth that remained. That took off thirty-three pounds and brought the car to weight. Then I found that I needed more weight to the flywheel, and, upon adding that, could not lighten the car in other ways, so was not allowed to start, as I was slightly over weight.

"I made arrangements to drive a Gobron-Brillie car of 100-horsepower in the race, but my father would not allow me to start in the strange car. Of course, this car would do for the cup race, and may be used now, but I shall probably have new one."

Mr. Harkness said that he had applied for space in which to exhibit his car at the New York Show and had been refused.

"I shall go to Florida," said he, "to meet William K. Vanderbilt, Jr., Harlan W. Whipple, Charles Tangeman and others in the race for gentlemen drivers which is to be put on there. Should there be a transcontinental race I shall enter that also. That contest should be a race from coast to coast, everything to count, and the competitors to be turned loose in San Francisco and told to get to New York over the roads. The routes should be optional, with checking stations along each. The country through the West I know well, having traveled all through there on horseback."

Motor Boat Entry List Open Till February 1.

The Automobile Club of Great Britain and Ireland has issued notices to the effect that Alfred Harmsworth, donor of the Harmsworth International Cup for Motor Boats, has consented to the holding open of the entry list for challengers until noon of February 1, next. Entries have to be made through the recognized club of the various countries competing, and an interval of six months will be given between the receipt of a challenge and the holding of a race, which will probably be held in the Solent sometime in August. The only qualification for entry is that the boat shall not exceed forty feet over all.

Over in Berlin they are now looping the loop in automobiles. The public can generally find some reason to be happy if it only looks around.—Whitley, Ind., *News*.

MOTORISTS IN TWO CITIES WANT USE OF SPEEDWAYS.

Agitations have been started simultaneously in New York City and Philadelphia to secure to automobilists the boon of the use during one day in each week of the famous speedways in the two cities. New York motorists want to be permitted to have the exclusive use of the magnificent Harlem River Drive, built at a cost to the taxpayers of $5,000,000, during one day, arguing that the exclusive use of it by horsemen during the other six days should satisfy them. It is shown that on an average fewer than 100 vehicles a day use the drive. It is suggested that the Speedway offers an ideal place for automobile speed trials, as a kilometer or even a mile course that is nearly level and sufficiently straight can be marked off near the middle of its two-mile length, giving plenty of distance at each end for starting and stopping.

In Philadelphia the movement will probably take the form of a memorial or petition to the Park Commissioners for the use of the Fairmount Park Speedway by automobiles on one day each week. The petition will be signed by the 4,000 automobilists of the city and many other citizens who believe their request is reasonable. They will have a champion in Mayor Weaver, who at the last meeting of the park commissioners told them the time would come when they would have to recognize the rights of automobilists and allow them the use of the Speedway on certain days.

MASSACHUSETTS CLUB TICKET FOR ANNUAL MEETING.

BOSTON, Nov. 28.—The report of the nominating committee of the Massachusetts Automobile Club was to-day presented to the secretary, and will be immediately posted at the clubhouse on Boylston Street. According to the report, Col. James T. Soutter, who has been president of the club since President J. R. Bridge resigned in 1901, will retire, but will remain a member of the executive committee, having a place in the board of directors. His place is to be taken by Elliot C. Lee, first vice-president. Another no less important change suggested is the transfer of Dr. F. L. D. Rust, who succeeded L. E. Knott as secretary two years ago, from that office to membership in the board of directors. Dr. Rust's reason for no longer wishing to hold the office is that he expects to be out of the country for a greater part of next season. For secretary the committee suggests Frederic Tudor, Jr. Besides Colonel Soutter and Dr. Rust as new members of the board of directors, the nominating committee suggests F. Lothrop Ames and O. B. Cole. The retiring members are C. J. Rueter, J. R. Bridge, C. J. Glidden and Newton Crane.

The full list of nominations is as follows: President, Elliot Cabot Lee; first vice-president, Frank E. Peabody; second vice-president, Dr. Joseph C. Stedman; directors, Col. James T. Soutter, Dr. F. L. D. Rust, Henry Howard, O. B. Cole, Dr. W. S. Shrigley, Dr. William A. Rolfe, F. Lothrop Ames, Quincy A. Shaw, Jr., Stephen W. Sleeper and Arthur W. Stedman; treasurer, Royal R. Sheldon; secretary, Frederic Tudor, Jr. Mr. Peabody, who is nominated a first vice-president to replace Mr. Lee, holds no office this year. As Mr. Shaw and Mr. Sleeper are comparatively new members of the board of directors, having been elected last spring to fill vacancies caused by resignations, the complexion of the board is greatly changed.

Mr. Lee, nominated for president, and Mr. Cole, are members of the building committee which has charge of the large extension that is to be made to the clubhouse for garage purposes. The annual meeting of the club is to be held Saturday evening, December 12. After the business is completed the members of the club will listen to a lecture by Charles J. Glidden on the trip which he made during the past summer across the Arctic Circle in Sweden. The entertainment committee is preparing a number of monthly entertainments, and it is expected that the winter season will be very successful socially. The membership is steadily increasing and the need of larger quarters is every day more apparent.

A. C. of New Jersey Election.

The Automobile Club of New Jersey has elected officers for the ensuing year as follows: President, William E. Scudder; vice-president, Frank Eveland; treasurer, Joseph H. Gilmore; secretary, William C. Glass; board of governors, terms expire in 1904, S. Hague, W. R. Starrett, G. A. Randel, R. W. R. Koester, A. G. Armstrong and C. W. Lohmeyer; terms expire 1905, A. H. Lowe, George H. White, Frank G. Dickson, Dr. H. R. Simmons, C. E. Emerick and J. H. W. Lemkau.

Recent Incorporations.

The Auto Shop Company, in New Jersey, on November 25; capital stock $50,000, to manufacture, sell and exchange automobiles, motorcycles and motorboats. The headquarters of the company are to be in Paterson, N. J. Incorporators: Andrew T. Fletcher, William J. Tynan, Paterson; and Frederick Hand, Ridgewood

The Jennings Automobile and Manufacturing Company, in New Jersey; capital stock $500,000. Incorporators: John J. Curtis, Jr., Russell Bonnell and Edward W. Ward, all of Jersey City.

The W. W. Hyde Company, in Wisconsin, capital stock $25,000, to sell and manufacture automobiles. Register of Probate John C. Karel, one of the incorporators, states that the company proposes to build light gasoline touring cars Other incorporators are, W. W. Hyde and R. O. Eastman, both of Milwaukee, where the headquarters of the new company are to be located.

The Niagara Garage Company of Niagara Falls, N. Y., with $5,000 capital stock to manufacture motors, engines, etc. The incorporators are A. H. G. Hardwicke, H. S. Matthews and Willis L. Adams.

The Reliance Kerosene Motor Company, of New York with $100,000 capital stock to manufacture machinery, boats, etc. Incorporators: Frank L. Nichols, Oscar Zenchner and Edgar H. Scharrott.

ENDURANCE RUN GOLD MEDALS AWARDED.

Gold medals were awarded to eight competitors in the October endurance run to Pittsburg at a meeting of the executive committee of the National Association of Automobile Manufacturers held at the New York headquarters last Wednesday. The medals were awarded for the cars which made all the night controls before they closed officially at midnight, while first class certificates were given for every one of the twenty-four machines that reached Pittsburg.

The gold medal winners are as follows:

No. 2, Columbia, driven by B. B. Holcomb, Electric Vehicle Company.

No. 5, White, driven by Webb Jay, White Sewing Machine Company.

No. 6, White, driven by Paul H. Deming, White Sewing Machine Company.

No. 10, Toledo, driven by George Soules, Pope Motor Car Company.

No. 14, Pierce Arrow, driven by Charles Sheppie, Geo. N. Pierce Company.

No. 15, Pierce stanhope, driven by Percy P. Pierce, Geo. N. Pierce Company.

No. 16, Packard "Old Pacific," driven by E. Tom Fetch, Packard Motor Car Company.

No. 35, Stearns, driven by Frank B. Stearns, F. B. Stearns Company.

Three New Importers Licensed.

Just before Alexander Fischer and a representative of the Auto Import Company sailed for Europe, on Tuesday, to attend the Paris automobile show, the Association of Licensed Automobile Manufacturers granted Selden patent licenses and admitted to membership in the importers' branch of the association, Alexander Fischer, the Auto Imports Company and the Sidney Bowman Automobile Company. The addition of these three makes seven members of the importers' branch, Smith & Mabley, the Central and the Standard Automobile Companies and E. B. Gallaher having been admitted at the recent meeting of the A. L. A. M.

The Automobile Club of Philadelphia now has 130 members.

LOS ANGELES RACE MEET ROUSES PUBLIC TO BUY.

Effect of Track Victories Noticed by Los Angeles Dealers.—Rich Upland for Auto Trade.

LOCAL MANUFACTURING INDUSTRY GROWING.

Los Angeles, Cal., Nov. 30.—The race meet of the 20th and 21st stimulated trade here considerably, creating a small boom for the Toledo, Franklin, and Stevens-Duryea in particular. The Winton agency reports a number of sales made directly on account of Barney Oldfield's remarkable riding, and as the four-cylinder Toledo gave the best results in the races, no doubt the Toledo will have a big sale the coming year.

The actual sales of automobiles by Los Angeles dealers during the past year aggregate more than 575 machines, and these added to those sold last year show that more than 800 automobiles are now owned in Southern California, by a population of less than 250,000 people, and of these 800 machines more than half are owned in Los Angeles, a city of less than 125,000 population.

The Los Angeles automobile dealers have a big field, bounded on the south by San Diego, 150 miles down the Coast, on the north by Santa Barbara, 110 miles up the Coast, and inland by the towns of the orange belt, from 50 to 100 miles. All this country, known as Southern California, is generally handled from this city. The Oldsmobile, Rambler, and Ford agencies in this city have appointed sub-agents at some of the neighboring cities, such as Santa Barbara, Santa Ana, San Diego, San Bernardino, and San Luis Obispo.

The Oldsmobile Company lead in number of sales in Southern California, having disposed of fully 250 machines this year. These, with the Olds sold last year and late the year before, make about 400 Olds now used in Southern California.

The Pioneer Automobile Company of this city and San Francisco, which handles the Winton in California, has sold, from its Los Angeles house this year, eighteen Winton touring cars and has, already, orders booked for six 1904 Wintons.

The White steam touring car has made a hit on the Pacific Coast. The branch house at San Francisco has opened a large garage at Franklin and Market Streets in that city and will open a large garage in Los Angeles, on New Year's Day, on Broadway, a few doors below Seventh Street. The touring car has been sold all along the Coast and even in British Columbia, while a number have been shipped to Australia and New Zealand. Early in the year the White stanhope sold well because White touring cars were almost impossible to obtain.

W. K. Cowan, the pioneer automobile dealer, has had a good run on the Rambler this year, having sold about fifty to date. He also handles the Waverley electric and the Toledo gasoline cars, and is now showing the Waverley fitted with Edison battery. He reports sales of more than sixty Waverleys during the last two seasons, and last week delivered a two-cylinder Toledo to a customer in San Bernardino, eighty miles inland.

The agency for the Peerless for Southern California has been secured by N. W. Church, formerly agent for the St. Louis. Ellicott Evans of Pasadena has had the Peerless agency for the past year and disposed of about half a dozen cars. He now has three 1904 Peerless cars on the way to the coast.

The Cadillac, St. Louis, and Stevens-Duryea have had a pretty good run here this year. The Ford has been on local market during the last two months, and several car loads have been sold. Other runabouts introduced here are the Orient, Union and Auburn. A sample of the latest improved Northern has been shipped across the continent by express from the Detroit factory to N. W. Church, the Los Angeles agent.

Among the runabouts a newcomer is the Clarkmobile, which is handled for this coast by the Model Gas Engine Company of Auburn, Ind., which has a branch house in this city managed by P. H. Greer.

There are two automobile factories in Los Angeles. The Auto-Vehicle Company is now in its third year. A completed model of its Tourist car and a chassis were exhibited at the automobile races here last week, where they attracted some attention.

The 1903 Tourist, of which twenty-five were made, and are in use mostly in Southern California, was an 8-horsepower runabout, weighing about 1,300 pounds. The engine was a double-opposed cylinder, and the transmission was of the sun-and-planet style. A tonneau rear body portion was often fitted.

The 1904 Tourist has a 12-horsepower double-opposed horizontal engine placed under a brass hood in front, and the transmission is of sliding gear style. The chain has been discarded for shaft and bevel gear drive. The car is nicely upholstered and equipped with a French horn, side lamps and acetylene searchlights also, all imported.

The Shepherd Auto-Engine Company has begun building the Shepmobile, which is a single-cylinder runabout with long wheelbase. It has seven-horsepower and will have detachable tonneau seats. It has a brass hood of French type in front, covering the oil and water tanks. The engine is horizontal in the body, and ignition is by wipe spark.

Sam Sturgis of this city has brought out a 24-horsepower touring car, weighing about 1,900 pounds. The transmission is distinctly original and extremely simple. Experiments have shown this car has merit, and it is the intention of Mr. Sturgis and his associates to erect a factory and build it on an extensive scale.

HAVANA MOTORISTS ORGANIZE CO-OPERATIVE GARAGE CO.

The Havana Garage Company is the name of a new ent[illegible] has recently been organized by Dr. D. T. Laine and several other automobile enthusiasts. Says the *Havana Post* of November 22: The home of the company is at 28 Zuleta, where room has been secured to store and care for all the cars which Havana has at the present time. Considerable machinery for repairing and cleaning machines has already been put in, and more extensive arrangements are under foot.

The company is a co-operative concern, with a capital of $10,000, organized by the majority of the owners of cars in this city for their own convenience and protection. There are at present thirty-eight automobiles in Havana, owned by twenty-six enthusiasts, and of these, seventeen have joined the new enterprise. Reading rooms of the automobile club will be established in the same building, and it will be made a meeting place for tourists who bring their cars with them.

Any owner can become a member of the association by buying one or more shares of stock at $100 a share. The foreman of the storehouse or shop is a competent expert, who was brought here from New York for the purpose. It is the intention of the garage company to later furnish cars to the public at so much a day or month, thus helping to make the sport more popular here.

Dr. Laine, the moving power in the new enterprise, stated last night to a *Post* reporter that he is in hopes that many American car owners will come to Cuba the coming season. Tourists can bring their cars into the country without paying any duty for the period of three months, and at the end of that time can secure an extension for a similar period. The roads in the neighborhood of this city are unexcelled for automobile running and more beautiful scenery cannot be found in any country where good roads abound.

While no arangements have yet been made here for long distance racing, yet enthusiasts will find already prepared for them a splendid road 175 kilometers long, which runs among delightful vistas, and many short trips can be made to side villages and points of interest. Cuba has as much to arouse the tourist as the European countries, and is so much closer to the American cities that the members of the Havana club are confident that this will soon become a rendezvous during the months when the northern roads are impossible.

Parents

Self-Regulating Carbureter.

No. 744,257.—T. L. and T. J. Sturtevant of Quincy and Newton Center, Mass.

Fig. 1.—This float-feed spraying carbureter has a gasoline supply needle valve 21, which is held open by spring 27, and subject to regulation by nut 28, which presses against spring extension 31 of air and mixture lever 29, which is hand controlled. When lever 29 is moved to admit more air to the carbureter and more gasoline mixture to the motor, spring extension 31 is elevated by coming in contact with a series of screws, 32, of increasing height, so that needle valve 21 is permitted to open wider, by action of spring 27, thus permitting increased gasoline feed and maintaining the correct mixture. A vacuum diaphragm valve, 34, prevents excessive gasoline feed, due to suddenly increasing suction, by lifting automatically, thus presenting a more direct passage to the incoming air by exposing ports *C*, which are normally closed. The gasoline is admitted to the float chamber through the weighted needle valve, 43. The float actuated valve opening toggle levers are provided with rollers to reduce friction.

Detachable Tire.

No. 744,663.—Charles E. W. Woodward of Chicopee Falls, Mass.

Fig. 2.—Metal rim *b* is trough-shaped, its upturned sides, which slant inward slightly, receiving the base portion *c* of tire *d*. Wire rings are fitted in the circumferential channel *e* of the tire, and suitably spaced screws, first passing through the rim and tire base, are tapped into them. In this way the tire is held in place and prevented from creeping. The circumferential channel in the tire is made wide so that the tire can be removed, when the screws *g* are loosened, by pressing inward from the edge, and the ring *f* is split so that its two halves may be drawn into the opposite sides of the tire channel to hold the tire securely.

FIG 2.

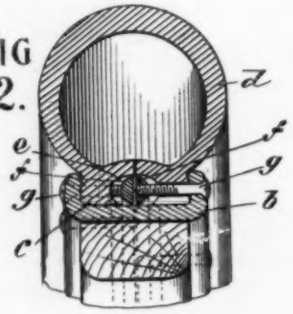


FIG 3.

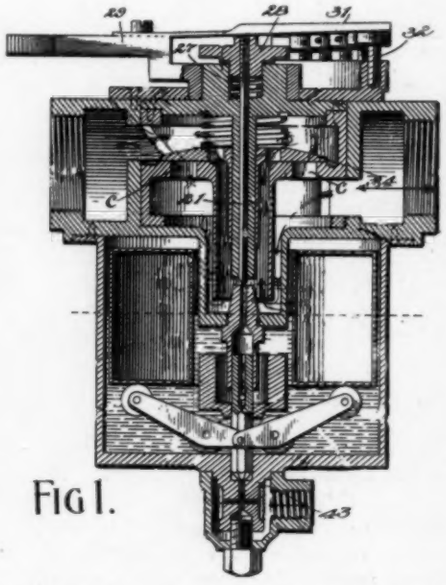


FIG 1.

Puncture-Proof Tire.

No. 744,435.—Irwin Tennant of Springfield, Ohio.

Fig. 3.—A single tube pneumatic tire having lateral non-inflated chambers 5, which, together with a metal strip 6, moulded in the tread, are designed to protect the air chamber 4 from punctures. To assure maximum resiliency metal strip 6 is preferably made in sections held together by clips, and enclosed with a wire-cloth jacket. This jacket protects the rubber from the edges of the metal strip, and serves to hold the strip in place, as the rubber flows into the interstices of the wire-cloth, in moulding, and is hardened in the process of vulcanizing.

Rotating Hydrocarbon Engine.

No. 744,380.—J. C. Meredith of Kansas City, Missouri.

Fig. 4.—A rotating hydrocarbon engine

FIG 4.

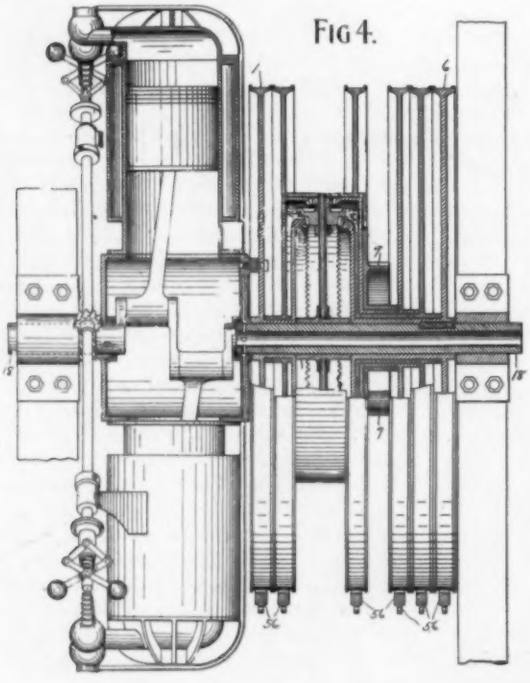


FIG 5.

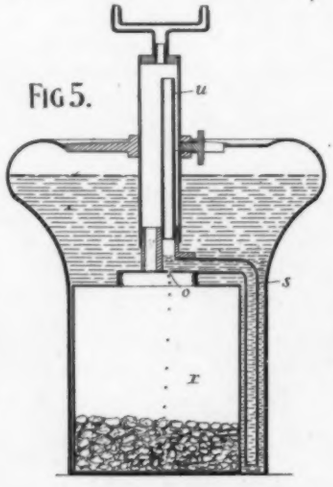
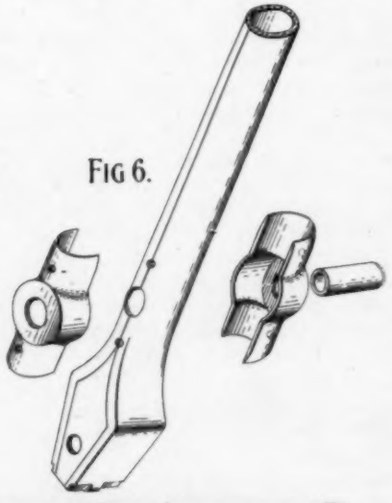


FIG 6.



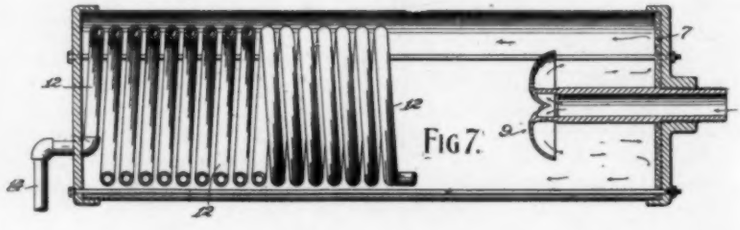


FIG 7.

in conjunction with a planetary transmission system having six brakes, 56, application of which, severally, causes sprocket or spur gear 9 to rotate at variable speeds in either direction. If the rotatable shaft 18 is prevented from turning, by applying brake on drum 6, the engine will rotate at maximum speed; if the engine is prevented from turning, by applying brake on drum 1, the crankshaft will rotate at equivalent speed, but in the opposite direction. Other speed changes are possible by application of the different brakes. The initial speed of either the cylinders or crankshaft is changed by governors which vary the lift of the exhaust valves. The engine is supplied with gas and cooling water through one end of the hollow crankshaft, and the exhaust gases escape through the other end.

Acetylene Gas Lamp.

No. 643,869.—George B. Gates of Portland, Maine.

Fig. 5.—The generating chamber *r* is submerged within the reservoir, and provided with means to hold it at varying heights to regulate the normal pressure in the generating chamber. Water is fed to the carbide through the capillary opening *O*. If the burners are turned off, or the gas pressure becomes excessive from other cause, the gas descends through tube *u* and forces the water down into tube *S* and away from capillary opening *O*, thus stopping the generation of additional gas.

Improved Metallic Spoke.

No 743,539.—Thomas Midgley of Columbus, Ohio.

Fig. 6.—A tubular spoke as shown to which metal clips are brazed and reinforced by a small tube passing through the spoke, and brazed into position, the whole forming a solid bearing for a sprocket wheel or brake band, the attaching bolts passing through the reinforcing tubes.

Gas Engine Muffler.

No. 744,418.—Robert C. Shepherd of Los Angeles, California.

Fig. 7.—A gas engine muffler having a deflector 9, which throws the incoming gases against an asbestos pad 7, after which they are allowed to escape through the coil of pipe 12, discharging into the atmosphere at 14. The asbestos pad serves to deaden the sound, and the coil of pipe acts as a condenser and reduces the pressure of the exhausting gases, as they are obliged to travel a considerable distance before striking the atmosphere.

A company with $25,000 capital stock has been organized to operate automobiles in public service at Nashville, Tenn. The plans include a mail line to Chapel Hill, forty miles distant, and auto 'bus service to Belle Meade, the Hermitage, and other points of interest.

PARTIAL ALLOTMENT OF SPACES FOR THE CHICAGO SHOW.

Seventy-seven manufacturing concerns or their agents have been allotted exhibition spaces on the ground floor of the main building and annex for the Chicago automobile show, to be held February 6 to 13. Thirty-eight other applicants have not yet had their allotments made, but they are mainly manufacturers of parts and accessories and will be given spaces in the balcony. The demand for space this year is larger than ever and so much greater than last year that the whole of the balcony is to be pressed into use for the display of parts, fittings and supplies. Last winter none of the balcony was used. The unprecedented demand made it necessary to prepare new diagrams and the allotment of spaces for accessories will not be made for several days.

Following are the exhibitors who will be accommodated on the main floor, with the number of spaces each will occupy: Winton Motor Carriage Co., 4; Charron, Girardot & Voigt Co., 4; Knox Automobile Co., 4; Studebaker Bros. Mfg. Co., 3; St. Louis Motor Carriage Co., 1; Cadillac Automobile Co., 4; Geo. N. Pierce Co., 4; Electric Vehicle Co., 8; Locomobile Company of America, 4; Woods Motor Vehicle Co., 4; Thos. B. Jeffery & Co., 6; Crest Mfg. Co., 2; F. B. Stearns Co., 2; Haynes-Apperson Co., 4; Temple & Austrian, 7; Olds Motor Works, 4; Packard Motor Car Co., 4; Peerless Motor Car Co., 4; E. R. Thomas Motor Co., 2; Hoffman Automobile Co., 2; Elmore Mfg. Co., 2; Northern Mfg. Co., 2; The Autocar Co., 2; Kirk Mfg. Co., 1; White Sewing Machine Co., 3; National Motor Vehicle Co., 2; Apperson Bros. Automobile Co., 2; Ford Motor Co., 2; Matheson Motor Car Co., Ltd., 1; Mitchell Wheel Works, 1; Columbus Automobile Co., 2; Fredonia Mfg. Co., 2; T. L. Tincher, 2; Regas Automobile Co., 2; Sandusky Automobile Co., 2; Michigan Automobile Co., 1; Irvin Tennant, 1; Chelsea Automobile Co., 2; Marble-Swift Automobile Co., 2; Holley Motor Co., 2; A. C. Banker, 3; Sintz Motor Car Co., 1; Waterloo Gas Engine Co., 1; Union Automobile Co., 1; Premier Motor Mfg. Co., 2; American Darracq Automobile Co., 2; Mead Cycle Co., 1; Reid Mfg. Co., 2; J. H. Dawson Machinery Co., 2; Federal Mfg. Co., 2; Chicago Motor Cycle Co., 2; Austin Automobile Co., 2; Rodgers & Co., 2; Auburn Automobile Co., 2; Model Gas Engine Co., 2; Wheeler Mfg. Co., 2; B. F. Goodrich Co., 2; Hartford Rubber Works, 2; G & J Tire Co., 2; Bartholomew Co., 4; Diamond Rubber Co., 2; Rothschild & Co., 4; Fisk Rubber Co., 2; Duquense Mfg. Co., 4; Pittsburg Reduction Co., 2; Twentieth Century Mfg. Co., 2; Brandenburg Bros. & Alliger, 2; Pope Mfg. Co., 1; Aurora Automatic Machinery Co., 1; Goodyear Rubber & Tire Co., 2; Badger Brass Mfg. Co., 2; Peterson & Draper (for Brown-Lipe Gear Co., American Roller Bearing Co., Baldwin Chain & Mfg. Co., Midgley Mfg. Co., and Cleveland-Canton Spring Co.), 2.

The applicants to whom spaces have not been allotted and who will probably be given places in the balcony are: Detroit Motor Works, Cullman Wheel Co., Northwestern Storage Battery Co., American Coil Co., Rochester Steam Motor Works, Fairbanks, Morse & Co., Turner Brass Works, Electric Contract Co., Brennan Motor Co., Motsinger Device Mfg. Co., Motor Car Supply Co., P. J. Dasey Co., Miller-Knobloch Electric Mfg. Co., Hendee Mfg. Co., C. F. Splitdorf, American Burner Co., Manhattan Storage Co., Whalebone Rubber Co., Warner Gear Co., Western Motor Co., Briscoe Mfg. Co., Muncie Wheel & Jobbing Co., Columbus Brass Co., Barton Boiler Co., Timken Roller Bearing Axle Co., Hussey Drop Forging & Mfg. Co., Chas. Kaestner Mfg. Co., Emil Grossman, Hyatt Roller Bearing Co., Shelby Tube Co., Veeder Mfg. Co., Rose Mfg. Co., National Carbon Co., Electric Storage Battery Co., Gray & Davis, Morgan & Wright, Flint Upholstering Co., and A. H. Funke.

Prepare Better Tire Fastenings.

AKRON, Nov. 27.—In the preparation for the season of 1904, some new features are noticeable in the manufacture of automobile tires. The main object with the manufacturers here is to prevent tires slipping from the rims of the wheels.

The Diamond Rubber Company expects to accomplish this in their 1904 tire by a lug made of rubber instead of a leather covering. Another improvement is expected to result from the substitution of a bevel screw instead of a thumbscrew, as heretofore used. With the bevel screw a wrench will be necessary. The new tire will displace sixteen different styles with leather-covered lugs.

The Goodyear Tire and Rubber Company will introduce to the trade a flat tread clincher tire to take the place of the old style. The improvement is expected to prevent skidding of autos when they turn sharp corners or go on wet pavements.

The manufacturers here are counting on a larger trade than ever this coming season, notwithstanding that last summer was the banner year. It is considered of great advantage by the manufacturers that they have entered into an agreement as to the styles and prices of tires.

J. A. Swinehart of this city has been granted a patent on a new tire that may work a revolution. It will be made without wires, and is a clincher. The advantages claimed for it is that it is the cheapest-made auto tire in the world, and, in addition, it is urged that it is one of the strongest and most durable of tires. A stock company with $100,000 capital stock is being formed, and much of the stock is already sold. The new company will be known as the Swinehart Clincher Tire Company.

News Notes and Trade Items.

The Pioneer Automobile Company of Los Angeles, Cal., has taken the agency for the Baker electrics.

The Kensington Automobile Company of Buffalo has made a general assignment to Albert Schelling.

Hyatt roller bearings are now made for front wheel hubs as well as for rear wheel axles, and several 1904 models of automobiles, among them the Cadillac, are to be fitted with these bearings.

The Cleveland automobile show will be held in Gray's Armory the week of February 29–March 5. It is very probable that it will be held under the auspices of the Cleveland Automobile Club, instead of being a private affair, as it was this year.

Twelve Studebaker electric vehicles have been ordered from the Studebaker Bros. Manufacturing Company by the Edison Storage Battery Company to be equipped by the latter with Edison nickel-steel batteries.

H. J. Dingman, manager of the automobile department of the Goodyear Tire & Rubber Co. of Akron, Ohio, has just returned from Europe where he studied the best and most improved construction of foreign tires.

F. A. La Roche, Chas. D. Cooke and Henry Mehl of the American Darracq Auto Company sailed on December 1st for Paris. They will visit the Paris show and arrange for the importation of 1904 Darracq cars to the United States. They will return about Christmas.

Arrangements have been made by Alexander Fischer of New York with Herreshoff Bros. of Bristol, Conn., whereby the Herreshoffs will build motor boat hulls to the order of Mr. Fischer, who will supply motors of French and German make to be placed in them.

The E. R. Thomas Motor Co., Buffalo, N. Y., have about ready for launching an automobile boat which promises to be the fastest thing of its kind on the Lakes, size and weight considered. The length of this boat will be thirty feet and the beam five feet. It is substantially constructed to stand the strain of fast work and rough seas and will be equipped with a Thomas 24-hp. motor.

Weekly meetings of the New York Automobile Trade Association have been resumed upon the call of President Percy Owen. Although the organization was unsuccessful last spring in securing the adoption of a schedule of storage and repair charges by the New York garages and the abolishment or regulation of commissions to chauffeurs on sales made through them, it is believed there is a field of usefulness for the association in other directions.

The Ansonia Motor Car Company has opened rooms at Broadway and 66th Street, New York, for the sale of second-hand automobiles. Frank C. Armstrong and Charles I. Scott, of the Electric Vehicle Company, are interested in the new concern. Theodore B. Tounley is manager.

The Olds Motor Works has opened a branch retail establishment in Boston in the quarters at 239 Columbus Avenue, formerly occupied by H. B. Shattuck & Co. The store will be in charge of Benjamin Smith, who will have charge of agencies throughout New England.

T. E. Schutz of Homan & Schulz has bought his partner's interest in their garage at 2642 Broadway, New York, and will conduct it alone. The business of the store at 134 West 38th Street will, however, continue to be conducted under partnership agreement as heretofore, the Rambler agency having been recently secured.

The Manhattan Storage Company, 42 Cortlandt Street, New York, is now placing in the market domestic automobile horns made of brass and nickeled. They are made in a number of sizes and every part of them, including the reed, is made in the United States. Heretofore all good reeds have been imported.

The Buffalo Specialty Mfg. Co., who own all rights under the patent of Charles E. Duryea for making, selling and using tire compounds, of the kind intended to be injected in pneumatic tires to make them self-healing in case of puncture, announce that they have filed suit against Joseph Strauss & Sons of Buffalo for infringement in offering for sale "Longhurt's Tire Balm," a compound made in Brooklyn, N. Y. They will likewise prosecute all other responsible infringers and issue warning to that effect. Their rights are said to include any compound used for the purpose referred to, whether in powder, paste or liquid form.

E. S. Partridge, who is generally known to the automobile industry and trade through his connection as business agent with this publication, has been elected vice-president of the Standard Automobile Company of New York and will hereafter devote his talents to the organization of import trade, agency, construction and repair business on the comprehensive and ambitious plan which this concern has outlined for itself. During the absence of E. T. Birdsall, M.E., the firm's general manager, who sailed for France Wednesday in order to study the French automobile exhibition and arrange for importations of Decauvilles and possibly other French cars of merit, Mr. Partridge will manage the company's affairs in general.

The New York salesrooms of the Knox Automobile Company of Springfield, Mass., are to be moved to the store at 152 West Thirty-eighth Street, now occupied by C. A. Duerr & Co., agents for the Reber & Ford cars. The Duerr agency will move to Broadway and Fifty-eighth street, where a well-equipped salesroom will be fitted up.

The Atwood Mfg. Co. of Amesbury, Mass., reports having taken more contracts for its automobile lamps than ever before at this time. A large force of lamp-makers is at work in the company's big factory, which is equipped with the most modern machinery and approved appliances for lamp making. Every lamp passes through three inspections and is tested before leaving the factory.

Arrangements have been completed for the expansion of the business of the A. L. Dyke Automobile Supply Company of St. Louis and the authorized capital stock will be increased from $10,000 to $25,000. Several residents of St. Louis have become associated with Mr. Dyke, and F. H. and Roy F. Britton and Charles Peters will become directors. The company is seeking larger quarters in the business section of the city, and will put on the road several experienced salesmen.

The Crawford bicycle factory, at Hagerstown, Md., now owned by the Pope Manufacturing Company, has been started at work on the manufacture of 1,000 automobiles. A model car built to the order of Manager E. E. Hinsman, of the Crawford works, was recently inspected by Charles W. Walker, manager of the Pope company's eastern factories, and by Harold Pope, a son of Col. A. A. Pope, and shortly after their return to Hartford Manager Hinsman received instructions to immediately begin work on 1,000. The machine is a two-passenger, 6-horsepower car. Nearly all of the parts will be made in the Hagerstown plant.

The victories of the Stevens-Duryea machines in the latter part of November, merit special mention. In the second race at Los Angeles on November 21, it won by three-quarters of a mile, in 7:43 for the five miles. And in the Eagle Rock hill-climbing contest at West Orange, N. J., the Stevens-Duryea cars made the second best time in competition with cars of 30 to 40-horsepower, and won in each of the three events in which they were entered. On the day before Thanksgiving, a Stevens-Duryea, driven by Mr. Owesney, led the way for sixteen cars of well-known makes in a road race from Washington, D. C., to Frederick, Md. Full accounts of these various events are contained in this issue.

The Automobile Club of Minneapolis has arranged for headquarters in the Pense Automobile Company's building now being erected at 717–719 Hennepin Avenue.